Air Force Space Command

SPACE AND MISSILE SYSTEMS CENTER STANDARD

CONFIGURATION MANAGEMENT

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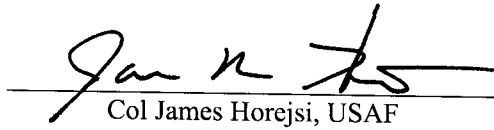
FOREWORD

1.   This standard defines the Government's requirements and expectations for contractor performance in defense system acquisitions and technology developments.

2.   This new-issue SMC standard comprises the text of The Aerospace Corporation report number TOR-2006(8583)-1.

3.   Beneficial comments (recommendations, additions, deletions) and any pertinent data that may be of use in improving this document should be documented on a Standardization Document Improvement Proposal appearing at the end of this document or by letter. All proposals for changes shall be addressed to

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4.   This standard has been approved for use on all new SMC/AFPEO-Space development, acquisition, and sustainment contracts, including new contracts for legacy programs:

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Col James Horejsi, USAF
SMC Chief Engineer

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1.0   SCOPE.

This document defines configuration management requirements which are to be selectively applied, as required, throughout the life cycle of any configuration item (CI):

   a. Developed wholly or partially with Government funds, including non-developmental items when the development of technical data is required to support off-the-shelf equipment or software, or
   b. Designated for configuration management for reason of integration, logistics support, or interface control.

1.1   Applicability

This standard applies to Space and Missile Systems Center Los Angeles Air Force Base activities and contractors who are tasked with the application of configuration management

1.2   Government Tailoring of requirements.

This standard is applicable only to the extent specified in the tasking directive or contract Statement of Work (SOW). Contracts invoking this standard will specifically identify the appropriate applicable paragraphs and Appendices, or portions thereof, in the tasking directive or contract SOW. The selection of necessary configuration management requirements from this standard to be applied to a specific program will be tailored by the government to suit the life-cycle phase, complexity, size, intended use (including joint and combined interoperability) , mission `criticality, and logistics support of the CIs.

2.0   APPLICABLE DOCUMENTS

Usage Note: Latest version unless otherwise indicated.

MIL-STD-1388-1	Logistic Support Analysis (Superseded [S/S] by Mil-Hdbk-502)
MIL-STD -1388-2,	DoD Requirements for a Logistic Support Analysis Record (S/S By Mil-Prf-49506)
MIL-STD-280	Definitions Of Item Levels, Item Exchangeability, Models, And Related Terms (S/S By Mil-Hdbk-505)
MIL-STD-1520	Corrective Action And Disposition System For Nonconforming Material (No S/S Document)
MIL-STD-961	Defense And Program-Unique Specifications Format And Content
MIL-STD-881	Work Breakdown Structures For Defense Material Items (S/S By Mil-Hdbk-881)
MIL-STD-973	Configuration Management (No S/S Document)
MIL-STD-130	Identification Marking of US Military Property
MIL-STD-882	System Safety
MIL-STD-965	Parts Control Program (S/S By Mil-Hdbk-965)
MIL-HDBK-881	Work Breakdown Structures for Defense Materiel Items
MIL-P-15024	Plates, Tags and Bands for Identification of Equipment
ASME Y 14.100	Engineering Drawing Practices
IEEE STD -610.12	Glossary of Software Engineering Terminology, September 28,1990
ISO/IEC 12207	Software Life Cycle Processes
SD-2	Non-developmental Item Program
Title 10	United States Code, Section 2302, "Definitions"

3.0 ACRONYMS

3.1 Acronyms used in this standard.

The acronyms used in this TOR are defined as follows:

ABL	Allocated Baseline
ACD	Allocated Configuration Documentation
AIS	Automated Information System
AMSDL	Acquisition Management Systems and Data Requirements Control List
CAGE	Commercial and Government Entity
CAO	Contract Administration Office
CCB	Configuration Control Board
CDR	Critical Design Review
CDRL	Contract Data Requirements List
CI	Configuration Item
CM	Configuration Management
CSA	Configuration Status Accounting
CSAR	Configuration Status Accounting Report
CSCI	Computer Software Configuration Item
DID	Data Item Description
DLA	Defense Logistics Agency
DOD	Department of Defense
DODAAC	Department of Defense Activity Address Code
DODISS	Department of Defense Index of Specifications and Standards
DUI	Data Use Identifier
ECP	Engineering Change Proposal
EMD	Engineering and Manufacturing Development
FBL	Functional Baseline
FCA	Functional Configuration Audit
FSD	Functional Configuration Documentation
GFD	Government Furnished Data
GFE	Government Furnished Equipment
HWCI	Hardware Configuration Item
ICD	Interface Control Drawing
ICWG	Interface Control Working Group
IDD	Interface Design Document
ILS	Integrated Logistics Support
IRS	Interface Requirements Specification
LSA	Logistics Support Analysis
MRB	Material Review Board
MTS	Mobile Training Sets
NDI	Non-Developmental Item
NOR	Notice of Revision
NSN	National Stock Number
PBL	Product Baseline
PCA	Physical Configuration Audit
PCD	Product Configuration Documentation
PDI	Privately Developed Item
PDR	Preliminary Design Review
PPSL	Program Parts Selection List
RFD	Request For Deviation
SPS	Software Product Specification
SDL	Software Development Library
SCN	Specification Change Notice
SMC	Space and Missile Center

SOW	Statement of Work
TCTO	Time Compliance Technical Order
TRR	Test Readiness Review
VDD	Version Description Document
VE	Value Engineering
VECP	Value Engineering Change Proposal
WBS	Work Breakdown Structure

3.2   DEFINITIONS

Allocated Baseline (ABL). The approved allocated (design-to) configuration documentation.

Allocated Configuration Documentation (ACD). The documentation describing a CI's functional, performance, interoperability, and interface requirements that are allocated from those of a system or higher level configuration item; interface requirements with interfacing configuration items; and the verifications required to confirm the achievement of those specified requirements.

Approval/contractual implementation. The acceptance by the Government of a document as complete and suitable for its intended use. Approval/contractual implementation of configuration documentation means that the approved documentation is subject to the Government's configuration control procedures.

Audit. An independent evaluation conducted by authorized persons.

Baseline. A formally approved version of a configuration item, regardless of media, formally designated and fixed at a specific time during the configuration item's life cycle. (Source: ISO/IEC 12207)

Block change concept. For hardware configuration items, an engineering change implementation concept that designates a number (i.e., a block) of consecutive production units the configuration item to have an identical configuration on delivery and in operation. (Using this concept, the production run is divided into "blocks" of units. The production line incorporation point for a proposed ECP is delayed to coincide with the first unit of the next block, or retrofit is required at least for all already delivered units of the current block.) For computer software configuration items, once the product baseline has been established, the concept requires the accumulation and the simultaneous implementation of a number of routine software changes to minimize the number of interim versions and related documentation.

Classification of defects. The enumeration of possible defects of the unit or product, classified according to their seriousness. Defects will normally be grouped into the classes (e.g. orthogonal defect classification for software) of critical, major or minor: however, they may be grouped into other classes, or into subclasses within these classes. (Source: MIL-STD-109)

Commercial and Government Entity (CAGE) Code. A five position alphanumeric code with a numeric in the first and last positions (e.g., 27340, 2A345, 2AA45, 2AAA5), assigned to United States and Canadian organizations which manufacture and/or control the design of items supplied to a Government Military or Civil Agency or assigned to United States and foreign organizations, primarily for identifying contractors in the mechanical interchange of data required by MILSCAP and the Service/Agency Automated Data Processing (ADP) systems.

Computer database. See "database".

Computer software. See 'software".

Computer Software Configuration Item (CSCI). An aggregate of software that satisfies an end use function and is designated for purposes of specification, interfacing, qualification testing, configuration management, or other purposes. CSCIs are selected based on tradeoffs among software function, size, host or target computers, developer, support strategies, plans for reuse, criticality, interface considerations, the need to be separately

documented and controlled, and other factors. A CSCI is composed of one or more software units. A computer software configuration item (CSCI) may also be interchangeably termed as software item (SI).

Computer software documentation. Technical data or information, regardless of media, which documents the requirements, design, or details of computer software; explains the capabilities and limitations of the software; or provides operating instructions for using or supporting computer software during the software's operational life cycle.

Computer software unit (CSU). See software unit.

Configuration. For purposes of this standard, the functional and physical characteristics of existing or planned hardware, firmware, or software or a combination thereof as set forth in technical documentation and ultimately achieved in a product.

Configuration audit. See "Functional configuration audit" and "Physical configuration audit".

Configuration baseline. Configuration documentation formally designated by the Government at a specific time during a CI's life cycle. Configuration documentation, plus approved changes from that documentation, constitute the current approved configuration baseline. There can be three formally designated configuration baselines in the life cycle of a configuration item, the functional, allocated, and product baselines.

Configuration control. The systematic proposal, justification, evaluation, coordination, approval or disapproval of proposed changes, and the implementation of all approved changes, in the configuration of a CI after establishment of the configuration baseline(s) for the CI.

Configuration Control Board (CCB). A board composed of technical and administrative representatives who recommend approval or disapproval of proposed engineering changes to a CI's current approved and baselined configuration documentation. The board also recommends approval or disapproval of proposed deviations from a CI's current approved and baselined configuration documentation.

Configuration documentation. The technical documentation, including architectural and design products, that identifies and defines the item's functional and physical characteristics. The configuration documentation is developed, approved, and maintained through three distinct evolutionary increasing levels of detail. The three levels of configuration documentation are the functional (build-to) configuration documentation, the allocated (design-to) configuration documentation, and the product (as-built) configuration documentation.

Configuration identification. Configuration identification includes the selection of CIs; the determination of the types of configuration documentation required for each CI; the issuance of numbers and other identifiers affixed to the CI and to the technical documentation that defines that CI's configuration, including internal and external interfaces; the release of CIs and their associated configuration documentation; and the establishment of configuration baselines for CIs.

 Configuration Item (CI). A configuration item is an aggregation of hardware and /or software and/or firmware that satisfies an end use function and is designated by the Government for separate configuration management. [Note: Initially, depending on the level to which the Government is intending to conduct baseline control, developing contractors may define/propose their configuration items and provide them to the Government for approval. The Government may then approve those configuration items or give the contractor formal direction to change them.]

Configuration Management (CM).
a) As applied to configuration items, a discipline applying technical and administrative direction and surveillance over the life cycle of items to:
      (1) Identify and document the functional and physical characteristics of configuration items.
      (2) Control changes to configuration items and their related documentation.
      (3) Record and report information needed to manage configuration items effectively, including the status of proposed changes and implementation status of approved changes.

(4) Audit configuration items to verify conformance to specifications, drawings, interface control documents, and other contract requirements.

b). As applied to digital data files, the application of selected configuration identification and configuration status accounting principles to:

(1) Uniquely identify the digital data files, including versions of the files and their status (e.g., working released, submitted, approved) .

(2) Record and report information needed to manage the data files effectively, including the status of updated versions of files.

Configuration Management Plan (CMP). The document defining how configuration management will be implemented (including policies and procedures) for a particular acquisition or program.

Configuration Status Accounting (CSA) . The recording and reporting of information needed to manage configuration items effectively, including:

- A record of the approved configuration documentation identification numbers.
- The status of proposed changes, and deviations, to the configuration.
- The implementation status of approved changes.
- The configuration of all units of the configuration item in the operational inventory.

Contractor. An individual, partnership, company, corporation, association or other service, having a contract with for the design, development, manufacture, maintenance, modification, or supply of items under the terms of a government contract.

Data. Recorded information, regardless of medium or characteristics, of any nature, including administrative, managerial, financial, and technical.

Database. A collection of related data stored in one or more computerized files in a manner that can be accessed by users or computer programs via a database management system.

Defect. Any nonconformance of a characteristic with specified requirements.

Deficiencies. Deficiencies consist of two types:

- Conditions or characteristics in any item which are not in accordance with the item's current approved configuration documentation; or
- Inadequate (or erroneous) item configuration documentation which has resulted, or may result, in units of the item that do not meet the valid requirements for the item.

Design change. See "engineering change".

Developmental configuration. The contractor's design and associated technical documentation that defines the evolving configuration of a configuration item during development. It is under the developing contractor's configuration control and describes the design definition and implementation. The developmental configuration for a configuration item consists of the contractor's released hardware and software designs and associated technical documentation until establishment of the formal product baseline.

Deviation. A specific written authorization, to depart from a particular requirement(s) of an item's current approved configuration documentation for a specific number of units or a specified period of time, or which during or after manufacture, having been submitted for Government inspection or acceptance, is found to depart from specified requirements, but nevertheless is considered suitable for use "as is". (A deviation differs from an engineering change in that an approved engineering change requires corresponding revision of the items current approved configuration documentation, where as a deviation does not. However, it shall be required that a unique identity be given to deviated end items and thereafter that status accounting records reflect usage of that unique identity, hence deviated parts/materials.)

Engineering change. A change to the current approved configuration documentation of a configuration item at any point in the life cycle of the item.

Engineering change justification code. A code which indicates the reason for a Class I engineering change.

Engineering change priorities. The priority (emergency, urgent, routine) assigned to a Class I engineering change which determines the relative speed at which the Engineering Change Proposal is to be reviewed, evaluated, and, if approved, ordered and implemented.

Engineering Change Proposal (ECP). A proposed engineering change and the documentation by which the change is described, justified, and submitted to the Government for approval or disapproval.

Engineering Change Proposal Types. A term covering the subdivision of Class I Engineering Change Proposals on the basis of the completeness of the available information delineating and defining the engineering change. They will be identified as preliminary or formal.

Engineering release. An action whereby configuration documentation or an item is officially made available for its intended use.

Engineering Release Record (ERR). A record used to release configuration documentation.

Evaluation. The process of determining whether an item or activity meets specified criteria.

Exchangeability of items . See Interchangeable .item, Replacement Item, and Substitute item.

Firmware. The combination of a hardware device and computer instructions and/or computer data that reside as read only software on the hardware device. The software portion of firmware is considered software and is subject to all of the software configuration management requirements in this standard. The firmware itself (i.e. the hardware device after the software has been permanently stored (i.e. burned in) is considered hardware and is subject to all of the hardware configuration management requirements in this standard in addition to requirements that apply specifically to firmware.

Fit. The ability of an item to physically interface or interconnect with or become an integral part of another item.

Form. The shape, size, dimension, mass, weight, and other visual parameters which uniquely characterize an item. For software, firmware form denotes the language and media.

Function. The action or actions which an item is designed to perform.

Functional area. A distinct group of system performance requirements which, together with all other such groupings, forms the next lower-level breakdown of the system on the basis of function.

Functional (Build-To) Baseline (FBL). The approved functional configuration documentation.

Functional characteristics. Quantitative performance parameters and design constraints, including operational and logistic parameters and their respective tolerances. Functional characteristics include all performance parameters, such as range, speed, lethality, reliability, maintainability, responsiveness, timeliness, and safety.

Functional configuration Audit (FCA). The formal examination of functional characteristics of a configuration item, prior to acceptance, to verify that the item has achieved the requirements specified in its functional and allocated configuration documentation.

Functional configuration Documentation (FCD). The documentation describing the system's functional, performance, interoperability, and interface requirements and the verifications required to demonstrate the achievement of those specified requirements.

Hardware. Items made of materiel, such as weapons, aircraft, ships, tools, computers, vehicles, and their components (mechanical, electrical, electronic, hydraulic, pneumatic).

Hardware Configuration Item (HWCI). An aggregation of hardware that satisfies an end use function and is designated for purposes of specification, interfacing, qualification testing, configuration management, or other purposes. A hardware configuration item (HWCI) may also be interchangeably defined as hardware item (HI).

Hardware Item (HI). See Hardware Configuration Item.

Integrated Logistics Support (ILS). A disciplined approach to the activities necessary to:
- cause support considerations to be integrated into system and equipment design,
- develop support requirements that are consistently related to design and to each other,
- acquire the required support, and
- provide the required support during the operational phase at minimum cost. (Source: MIL-STD-1388-1)

Interchangeable item. One which possesses such physical characteristics as to be equivalent in reliability, and maintainability, to another item of identical purposes, is capable of being exchanged for the other item, without selection for fit or performance without alteration of the items themselves or adjoining items, except for adjustments. (Source: MIL-STD-280)

Interface. The functional and physical characteristics required to exist at a common boundary.

Interface control. The process of identifying, documenting and controlling all functional and physical characteristics relevant to the interfacing of two or more items provided by one or more organizations.

Interface Control Documentation (ICD). Interface control drawings, requirements, or other documentation which depicts physical and functional interface of related or co-functioning items.

Interface Control Working Group (ICWG). For programs which encompass a system, configuration item, or a computer software configuration item design cycle, an ICWG is established to control interface activity among the Government, contractors, or other agencies, including resolution of interface problems and documentation of interface agreements.

Interoperability. The ability of the defense services and agencies to exchange information with each other (joint operations) or with an allied system (combined operations) to enable them to operate effectively together.

Item. A non-specific term used to denote any product, including systems, materials, parts, subassemblies, sets accessories etc. (Source: MIL-STD-280)

Life Cycle. A generic term covering all phases of acquisition operation, and logistics support of an item, beginning with concept definition and continuing through disposal of the item.

Life cycle cost . The total cost to the Government of acquisition and ownership of that system over its life cycle. It includes the cost of development, acquisition, support, and where applicable disposal.

Manufacturer's code. See "Commercial and Government Entity (CAGE) code"

Material. A generic term covering systems, equipment, stores, supplies, and spares, including related documentation, manuals, computer hardware, firmware and software.

Non-conformance. The failure of a unit or product to conform to specified requirements.

Non-developmental Item (NDI). Non-developmental item is a broad generic term that covers material available from a wide variety of sources with little or no development effort required by the Government. NDIs include:

- Items obtained from a domestic or foreign commercial marketplace.
- Items already developed and in use by other services, Defense activities, and Government agencies.
- Items already developed by foreign governments which can be supplied in accordance with mutual defense cooperation agreements and Federal and DoD acquisition regulations.(SD-2)

Non-recurring Costs. As applied to ECPs, these are one time costs, which will be incurred if an engineering change is approved and which are independent of the quantity of items changed, such as cost of redesign, special tooling, or testing.

Notice of Revision (NOR). A document used to define revisions to drawings, associated lists, or other referenced documents which require revision after Engineering Change Proposal approval.

Original. The current design activity document or digital data file(s) of record.

Physical characteristics. Quantitative and qualitative expressions of material features, such as composition, dimensions, finishes, form, fit, and their respective tolerances.

Physical configuration Audit (PCA). The formal examination of the "as-built" configuration of a configuration item against its technical documentation to establish or verify the configuration item's product baseline.

Product (As-Built) Baseline (PBL). The approved product configuration documentation. In addition to this documentation, the product baseline of a configuration item may include the actual hardware equipment, computer software and firmware.

Product Configuration Documentation (PCD). The combined performance/design documentation utilized for the production/procurement of the CI. The PCD incorporates the ACD describing a CI'S functional, performance, interoperability and interface requirements and the verifications required to confirm the achievement of those specified requirements. The PCD also includes such additional design documentation, ranging from the form and fit information about the proven design to a compete design disclosure package, as is deemed necessary for the acquisition program.

Recurring cost. Costs which are incurred for each item changed or for each service or document ordered.

Release. The designation by the contractor that a document is complete and suitable for use. Release means that the document is subject to the contractor's configuration control procedures.

Repair. A procedure which reduces but not completely eliminates a nonconformance and which has been reviewed and concurred in by the MRB and approved for use by the Government. The purpose of repair is to reduce the effect of the nonconformance. Repair is distinguished from rework in that the characteristic after repair still does not completely conform to the applicable drawings, specifications, or contract requirements. Proposed repairs approved by the Government are authorized for "use on a one-time basis only. (Source: MIL-STD-1520)

Replacement item. One which is interchangeable with another item, but which differs physically from the original item in that the installation of the replacement item requires operations such as drilling, reaming, cutting, filing, shimming, etc. in addition to the normal application and methods of attachment. (Source: MIL-STD-280)

Retrofit . The incorporation of new design parts, software, or firmware resulting from an approved engineering change to an item's current approved configuration documentation into already Government accepted (DD-250) and/or operational items.

Rework. A procedure applied to a nonconformance that will completely eliminate it and result in a characteristic that conforms completely to the drawings, specifications, or contract requirements . (Source: MIL-STD-1520)

Software. Computer programs, procedures and data pertaining to the operation of a computer system. Data may include, for example, information in databases, rule bases, and configuration data. Procedures may include, for example, interpreted scripts. Although some definitions of software include documentation, this standard limits the definition to computer programs, procedures, and data. [Definition adapted from IEEE Standard Glossary of Software Engineering Terminology. IEEE Std 610.12 dated September 28,1990.] The definition of software is independent of the media on which the software is stored or the device in which the software executes. Thus, the software portion of firmware is considered software and is subject to all of the software configuration management requirements defined in this standard.

Software Item (SI). See Computer Software Configuration Item.

Software unit. An element in the design of a software item; for example, a major subdivision, a class, object, module, function, routine, or database. Software units may occur at different levels of a hierarchy and may consist of other software units. Software units in the design may or may not have a one-to-one relationship with the code and data entities (routines, procedures, databases, data fules, etc.) that implement them or with the computer files containing those entities. A software unit is sometimes called a computer software unit (CSU).

Specification. A document prepared specifically to support acquisition which clearly and accurately describes essential technical requirements for purchasing materiel. Procedures necessary to determine that the requirements for the materiel covered by the specification have been met are also included. (Source: MIL-STD-961)

Specification Change Notice. A document used to propose, transmit, and record changes to a specification.

Substitute item. One which possesses such functional and physical characteristics as to be capable of being exchanged for another only under specified conditions or in particular applications and without alteration of the items themselves or of adjoining items. (Source: MIL-STD-280)

Support equipment. Equipment and computer software required to maintain, test, or operate an item or facility in its intended environment.

Survivability. The capability of a system to avoid or withstand a hostile environment without suffering an abortive impairment of its ability to accomplish its designated mission.

System. A composite of equipment, software, firmware, people and processes capable of performing and/or supporting an operational role. A complete system includes all equipment, related facilities, material, software, services and personnel required for its operation and support to the degree that it can be considered a self-sufficient unit in its intended operational environment.

Technical data. Technical data is recorded information (regardless of the form or method of recording) of a scientific or technical nature (including computer software documentation) relating to supplies procured by an agency. Technical data does not include computer software or financial, administrative, cost or pricing, or management data or other information incidental to contract administration.
- Technical data is required to define and document an engineering design or product configuration (sufficient to allow duplication of the original items) and is used to support production, engineering, and logistics activities.
- A technical data package should include all engineering drawings, associated lists, process descriptions, and other documents which define the physical geometry, material composition, performance characteristics, manufacture, assembly, and acceptance test procedures. For software, technical data should include architectural and design products.
- Technical data which provides instructions for the installation, operation, maintenance, training, and support of a system or equipment can be formatted into a technical manual.

A technical manual normally includes operation and maintenance instructions, parts lists or parts breakdown, and related technical information or procedures exclusive of administrative procedures. This data may be presented in any form (e.g., hard copy, audio and visual displays, magnetic tape disks, or other electronic

devices). Technical orders that meet the criteria of this definition may also be classified as technical manuals. (Title 10, United States Code, Section 2302,"Definitions")

Technical data Package. See "Technical data".

Technical documentation. See "Technical data".

Technical reviews. A series of system engineering activities by which the technical progress on a project is assessed relative to its technical or contractual requirements. The reviews are conducted at logical transition points .in the development effort to identify and correct problems resulting from the work completed thus far before the problems can disrupt or delay the technical progress. The reviews provide a method for the contractor and Government to determine that the development of a configuration item and its documentation have met contract requirements.

Training equipment. All types of maintenance and operator training hardware, devices, audio-visual training aids, and related software which:
- Are used to train maintenance and operator personnel by depicting, simulating, or portraying the operational or maintenance characteristics of an item or facility.
- Are kept consistent in design, construction, and configuration with such items in order to provide required training capability.

Unit. An assembly or any combination of parts, subassemblies and assemblies mounted together, normally capable of independent operation in a variety of situations. (Examples: Hydraulic jack, electric motor, electronic power supply, internal combustion engine, electric generator, radio receiver.) This term replaces the term "component."   A unit should not be confused with a software unit. Note. The size of an item is a consideration in some cases. An electric motor for a clock may be considered as a part in as much as it is not normally subject to disassembly. (Source: MIL-STD-280)

Version. An identified and documented body of software. Modifications to a version of software (resulting in a new version) require configuration management actions by either the Contractor, the Government, or both.

Work Breakdown Structure (WBS). A work breakdown structure (WBS) is a product-oriented family tree composed of hardware, software, services, data and facilities which results from systems engineering efforts during the acquisition of a defense materiel item. A work breakdown structure displays and defines the product(s) to be developed and/or produced and relates the elements of work to be accomplished to each other and to the end product(s). (Source: MIL-STD-881)

Work breakdown structure element. A work breakdown structure element is a discrete portion of a work breakdown structure. A work breakdown structure element may bean identifiable item of hardware, software, services, data or facilities. (Source: MIL-STD-881)

4.0 GENERAL REQUIREMENTS

4.1 Basic requirements.

The contractor shall implement an internal configuration management system for the control of all configuration documentation, physical media, and physical parts representing or comprising the product. For software/firmware, the system shall address the evolving developmental configuration and support environments (engineering, implementation and test) used to generate and test the product. The contractor's configuration management system shall consist of the following elements:

- Configuration identification.
- Configuration control.
- Configuration status accounting.
- Configuration audits.

Contractors shall implement the requirements of this TOR as identified in the contract statement of work (SOW) and insure compliance to the requirements by subcontractors.

4.2 Planning.

The contractor shall plan a configuration management program in accordance with the requirements of this standard, tailored appropriately for the particular CI(s) , their scope and complexity, and the contracted phase(s) of the life cycle. Planning shall be consistent with the objectives of a continuous improvement program which includes the analysis of identified problem areas and correction of procedures as necessary to prevent reoccurrence. The contractor's configuration management planning shall include:

- The objectives of the configuration management program and of each applicable configuration management element
- The configuration management organization and organizational relationships
- Responsibilities and authority of configuration management managers
- Configuration management resources (tools, techniques, and methodologies)
- Coordination with internal and external agencies (e.g., program managers, other contractors, other Government agencies, CCBs, foreign governments)
- Configuration management policies, processes, procedures, methods, records, reports and forms; and
- Computer-aided Acquisition and Logistics Support (CALS) configuration management in accordance with paragraph 4.3.

4.3 Computer-aided Acquisition and Logistic Support (CALS)

Configuration documentation shall be provided in either hard copy data transfer, transfer of processable data files, interactive access to data through contractor integrated technical information services, or combination of the above, as specified in the contract. The contractor's planning shall address all configuration management technical data requirements of the contract as far as data handling, processing, storage, integrity, transfer, security, and maintenance are concerned, over the performance period of the contract. The contractor shall propose to the Government, as applicable and in accordance with the changes clause of the contract, any requirements that may be imposed on the Government that will require associated contractor effort to maintain the security and integrity of shared data.

4.3.1 Data distribution/access

The contractor shall affix distribution statements to technical-data in accordance with the contract. Access to data shall be limited in accordance with the applicable distribution statements, as well as by data rights, Contract Data Requirements List (CDRL) distribution, security requirements, and data status level (released, submitted or approved unless otherwise specified). (See 6.6)

4.3.2 Automated processing and submittal of data.

To facilitate processing of submitted data, the contractor shall use automated processing and electronic submittal techniques, when specified in the contract. Where the data requirement is for data that is illustrated, for reference purposes, herein on a DD Form (e.g., DD Form 1692 for an ECP), the contractor may sequentially address the essential and applicable data elements of the submitted data by block number and title, or may

provide the data on an electronic version of the form as desired. Textual data in electronic form shall be by paragraph number, or topic heading, as applicable, in accordance with the format and content requirements for the data specified in the contract.

- The contractor shall make technical data available to the government, as required by contract.
- The contractor shall maintain the current status (working, released, submitted, approved) of all digital technical data in the data base at all times. Any data electronically transferred by the contractor to the Government shall be so identified.
- The contractor shall implement procedures to identify and control data during the contractor and Government review and update cycle. As a minimum, these procedures shall address:
  – Identification of data files submitted to the Government for review, annotation, comment and approval/disapproval, as applicable in accordance with Government specified review and approval requirements. Each submitted digital data file shall have a unique identifier (e.g., file name)which shall indicate file version, and "submitted" status. To assure file integrity, the file naming convention shall distinguish an altered (annotated, redlined) file version from the originally submitted file version by renaming it as a separate working status file.
  – How data and changes are transmitted.
  – How changes from previous versions are indicated.
  – Notification/acknowledgement of receipt, return, or acceptance.
    Indication of time constraints, if any, for automatic data acceptance; and
  – Data status accounting.

4.3.3   Interactive access to digital data.

In addition to the above requirements, the contractor's integrated technical information service shall, where contractually specified, accommodate pre-defined query and extraction of data and   shall implement procedures that define the control of data bases and files during the Government's and contractor's interactive review and update cycles. As a minimum, the following shall be defined:

- How data is to be accessed;
- Request for access and logging of access for read-only or annotation;
- Naming of temporary working version of the file(s) For purpose of annotation/mark up;
- Means of indicating whether a comment/annotation is
- essential/suggested;
- Re-identification of marked up versions, as required;
- Method of indicating acceptance, provisional acceptance, approval, or rejection, as applicable;
- Time constraints, if any, on data acceptance (e.g. automatic approval) by any links in the contractor's or the Government's review and approval chains;
- Automated status accounting, including tracking of disposition of required changes; and
- Re-identification of changed files.

4.4   Configuration identification.

The contractor's process for configuration identification shall include the selection of CIs; the determination of the types of configuration documentation required for each CI; and the issuance of numbers and other identifiers affixed to the CIs and to the technical documentation that comprises the CI's configuration documentation.

4.5   Configuration control

The contractor shall apply internal configuration control measures to the configuration documentation for each CI, prior to the time that it is baseline by the Government. The contractor shall apply configuration control measures to each baselined configuration item, and its configuration documentation, in accordance with this standard. The configuration control program shall:

- Ensure effective control of all CIs and their approved configuration documentation.
- Provide effective means, as applicable, for proposing engineering changes to CIs, requesting deviations pertaining to such items, preparing Notices of Revision, and preparing Specification Change Notices.
- Ensure implementation of approved changes.

4.6   Configuration Status Accounting [CSA].

The contractor shall implement a CSA system. The CSA system shall:
- Identify the current approved configuration documentation and identification number associated with each CI.
- Record and report the status of proposed engineering changes from initiation to final approval/contractual implementation.
- Record and report the results of configuration audits to include the status and final disposition of identified discrepancies.
- Record and report the status of all critical and major requests for deviations which affect the configuration of a CI.
- Record and report implementation status of authorized changes.
- Provide the traceability of all changes from the original baselined configuration documentation of each CI .
- Identify dependencies among CIs.
- Report the effectively and installation status of configuration changes to all CIs at all locations.

4.7   Configuration audits.

Configuration audits shall be performed before establishing a product baseline for the item. Configuration audits consist of the Functional Configuration Audit (FCA) and the Physical Configuration Audit (PCA).

Additional PCAs may be performed during production for selected changes to the item's configuration documentation or when contractors are changed. In accordance with the terms of the contract, the contractor tasked with the development or production of the item shall:
- Support the conduct of the FCA/PCA.
- Participate in the resolution of discrepancies identified during the conduct of the FCA/PCA.

5.0 DETAILED REQUIREMENTS

5.1 Purpose.

The purpose of this section is to identify detailed requirements that should be selectively applied to a configuration management program.

5.2 Configuration management administration.

5.2.1 Contractor's CM Plan.

If a CM Plan is identified as a requirement in the contract DD Form 1423, the Contractor's Configuration Management Plan shall be in accordance with the requirements of the contract and shall describe the processes, methods, and procedures to used to manage the functional and physical characteristics of the assigned CI(s). If so identified, the contractor shall:

- Develop a Configuration Management Plan in accordance with the requirements of DI-CMAN-80858B;
- Submit the plan and changes thereto in accordance with the CDRL; and
- Implement the activities required by this standard in accordance with the approved plan.

5.2.2 Work Breakdown Structure (WBS).

The contractor shall ensure traceability of CIs to the WBS elements when a WBS is invoked the contract.

5.2.3 Technical reviews.

The contractor shall ensure that the configuration management representatives participate in all technical reviews conducted in accordance with the contract requirements. The role of configuration management in the technical review process shall include evaluating the adequacy of the type and content of the configuration documentation, ascertaining that the configuration documentation is under formal Government and/or internal configuration control, and determining whether problems/action items identified at the review will require submittal of Engineering Change Proposals against the current approved configuration documentation.

5.3 Configuration identification.

5.3.1 Purpose of configuration identification.

The purpose of configuration identification shall be to incrementally establish and maintain a definitive basis for control and status accounting for a CI throughout its life cycle. To accomplish configuration identification, the contractor shall for hardware, software and firmware:

- Select CIs;
- Select configuration documentation to be used to define configuration baselines for each CI;
- Establish a release system for configuration documentation;
- Define and document interfaces;
- Enter each item of configuration documentation and computer software source code into a controlled developmental configuration;
- Establish the functional, allocated, and product baselines at the appropriate points in the system/CI life cycle, upon Government approval/contractual implementation of the applicable configuration documentation, and in accordance with contract requirements;
- Assign identifiers to CIs and their component parts and associated configuration documentation, including revision and/or version numbers where appropriate. Assigning serial and lot numbers, as necessary, to establish the CI effectivity of each configuration of each item of hardware, software and firmware;
- Ensure that the marking or labeling of items and documentation with their applicable identifiers enables correlation between the item, configuration documentation, and other associated data; and
- Ensure that applicable identifiers are embedded in the source code, and where contractually specified, electronically embedded in alterable microprocessors (firmware).

5.3.2   Configuration Item selection.

The contractor shall select and recommend potential CI's to the Government. Any item requiring logistics support and designated for separate procurement is a CI. However, all CI's associated with any given development program are not necessarily designated as CI's at the same point in time. Computer hardware, including the hardware portion of firmware, will be treated as CIs. Computer software will be treated as CSCIs throughout the life of the program regardless of how the software will be stored. The contractor is, however, required to maintain data regarding CI/CSCI dependencies. The final CI selection will be made by the Government. (See 6.3)

5.3.3   Developmental configuration.

The contractor shall establish and implement a developmental configuration management process for hardware, software and firmware. This process shall be used to control the documentation and repositories containing the elements of the developmental configuration. The contractor shall prepare a problem/change report to describe and prioritize each problem detected in hardware, software and firmware or the documentation that has been placed under internal configuration control. The problem/change report shall describe the corrective action needed and the actions taken to resolve the problem. These reports shall serve as input to the corrective action process. The contractor shall implement a corrective action process for handling all problems detected in the products under internal configuration management control. The corrective action process shall ensure that all detected problems are promptly reported, action is initiated on them, resolution is achieved, status is tracked and reported, and records of the problems are maintained for the life of the contract.

5.3.3.1 Documentation library.

The contractor shall establish a documentation library and implement procedures for controlling the documents residing within the documentation library.

5.3.3.2 Drawing library.

The contractor shall establish a drawing library and implement procedures for controlling the drawings, computer aided design (CAD), and computer aided manufacturing (CAM) instructions residing within the drawing library.

5.3.3.3 Software Development Library.

The contractor shall establish a software development library (SDL) and implement procedures for controlling the software residing within the SDL.

5.3.4   Configuration baselines.

Configuration management normally employs three types of configuration baselines, the functional, allocated, and product baselines, to provide for the progressive definition and documentation of the requirements and design information describing the various CIs designated for a system. The contractor shall recommend to the Government the types of specifications and associated documentation to a level of detail commensurate with logistic support requirements and procurement strategies that should be used to define each CI; however, the actual specifications provided shall be those ultimately ordered in the contract. Those specifications are subject to review and approval/contractual implementation by the Government. The appropriate baseline for each CI shall be established with the approval/contractual implementation of that specification as defined in the contract. (See 6.3)

5.3.4.1 Configuration baselines and their configuration documentation.

The contractor shall generate the configuration documentation required for the configuration baselines being established by the Government. The FCD, ACD, and PCD defining the configuration baselines shall be mutually consistent and compatible. Each succeeding level of configuration documentation from FCD to ACD to PCD shall be traceable to, and be a detailed extension of, its predecessor (s). If a conflict arises between levels of documentation, the order of precedence shall be (1) FCD, (2) ACD, and (3) PCD.

5.3.4.1.1 Functional configuration Documentation (FCD)

The contractor shall generate the documentation required for the functional baseline as specified in the contract DD Form 1423. The FCD shall be in the form of a system specification for a system, plus other applicable documentation (for example, Interface Requirements Specifications and Interface Control Documents for the system). (For Programs or contracts involving the development of a single CI, a system specification should not be generated.) The FCD shall also identify the configuration documentation for selected items which are to be integrated or interfaced with the CI, such as items separately developed or currently in the inventory.

5.3.4.1.2 Allocated Configuration Documentation (ACD)

The contractor shall generate the documentation required for the allocated baseline as specified in the contract DD Form 1423 for each CI. The ACD shall define requirements allocated from the FCD or from a higher level CI to a lower level CI. The ACD for the CI shall be in the form of an item or software requirements specification, and other referenced documentation (for example, Interface Control Documents, Interface Requirements Specifications and item or software requirements specifications for lower-level CI(s), if any. (For programs or contracts involving the development of a single CI, the CI specifications may serve as both the functional and allocated baselines.)

5.3.4.1.3 Product Configuration Documentation (PCD).

The contractor shall generate the documentation required for the product baseline in accordance with the requirements in the contract DD Form 1423. The PCD shall be in the form of item, software, material, and process specifications, engineering drawings, software architecture and design products, military specifications, and other technical documentation comprising a complete technical data package for the CI. The PCD may also be in the form of the actual equipment and/or software media. The PCD shall prescribe the necessary physical and functional characteristics of the CI and the verifications required to demonstrate required performance.

5.3.4.2 Maintenance of configuration documentation.

Once the related configuration baseline has been established, the contractor shall control and maintain the originals of the current approved configuration documentation for all configuration items specified in the contract.

5.3.5   Engineering release and correlation of manufactured products.

The contractor shall establish and maintain an engineering release system and shall use the system to issue configuration documentation to functional activities (e.g., manufacturing, logistics, quality assurance, acquisition) and to authorize the use of configuration documentation associated with an approved configuration. The contractor shall maintain current and historical engineering release information for all configuration documentation of all configuration items and their component parts. The engineering release system shall interrelate with the contractor's internal system of controls to assure that all engineering changes have been incorporated in production items as specified.

5.3.5.1 Specification release and approval.

If CI specifications are a contract requirement, the contractor shall include on each CI specification a contractor's release signature indicating that the document has been reviewed and is suitable for its intended use. In addition, the contractor shall submit each such specification to the Government for an approval and authentication signature. Approval and authentication by the Government will normally be accomplished on the version of the specification submitted for a baseline. Completion of the release and approval activities indicates mutual acceptance by the Government and the contractor of the CI'S requirements, as defined in the specification and referenced documents. After approval and authentication and contractual implementation, the specification establishes the appropriate baseline(s).

5.3.5.2 Requirements for Engineering Release System

5.3.5.2.1 Engineering Release System and Use of Release Records.

The contractor shall have an Engineering Release System which employs formal release records to authorize the use of new or revised configuration documentation. The contractor shall also ensure that information about the new approved configuration documentation is incorporated into their CSA information system.

5.3.6   Configuration identifiers.

CIs and their configuration documentation shall be assigned unique identifiers as described below.

5.3.6.1 CAGE Code.

The design activities and the manufacturers of CI's shall be identified by the Government assigned CAGE Code, which shall be affixed to all CI's, their subordinate parts and assemblies, configuration documentation, software media and products.

5.3.6.2 Government type designators and nomenclature.

Each CI that is designated by the Government for control, tracking and logistics purposes shall be assigned Government type designators and nomenclature in accordance with the requirements of the contract.

5.3.6.3 Document numbers .

An identification number shall be assigned and applied to specifications and to all revisions thereto; and to engineering drawings, associated lists and ancillary documents and to all revisions thereto. (See 6.6)

5.3.6.4 Part/item identification numbers.

A discrete part/item identification number shall be assigned to each CI and its subordinate parts and assemblies and be changed whenever a non-interchangeable condition is created. (See 6.6)

5.3.6.5 Software identifiers.

For each CSCI, the contractor shall identify its corresponding software units. For each CSCI and associated software units the contractor shall issue/obtain a software identifier, which shall consist of a name or number, and a version identifier, and shall relate the software to its associated software design documentation; revision; and release date. The contractor shall embed the software and version identifiers within the source code, and provide a method for display of the software and version identifier data to the user upon command.

5.3.6.6 Serial/lot numbers .

The contractor shall assign serial/lot numbers to like items, or to groups (lots) of like items, identified with a specific Government nomenclature, unless otherwise specified in the contract. The serial/lot numbers shall be;
- A maximum of 15 alphanumeric characters, with at least the last 4 numeric.
- Unique, consecutive, and non-duplicating for all items with that specific nomenclature.

5.3.6.6.1 Government serial numbers.

The Government will identify the serial numbers that shall be affixed to Government designated deliverable CIs by the contractor.

5.3.6.6.2 Reuse of serial numbers.

The original serial number of a unit/item/CI shall not be changed even when a change affecting interchangeability may require rework and re-identification. Once assigned, serial numbers shall not be reused for the same item/unit/CI.

5.3.6.7   Product identification/marking.

Unless otherwise specified in the contract, all CIs including parts, assemblies, units, sets and other pieces of military property shall be marked with their identifiers. (See 6.6)

5.3.6.7.1 Software marking and labeling.

The marking and labeling of software shall be as follows:
- Software identifier and version shall be embedded in the source code header. Automated Computer Program Identification Numbers (ACPINs) may be required in the case of software expecting depot level maintenance at the Warner Robbins depot. If so, ACPIN requests shall be designated as a unique contract data requirement.
- Each software medium (e.g., magnetic tape, disk) Containing copies of tested and verified software entities shall be marked with a label containing, or providing cross-reference to, a listing of the applicable software identifiers of the entities it contains.
- Media for deliverable CSCIs/SIs shall be labeled with The Government Contract number, CSCI/SI Number, other Government identifier (e.g. ACPIN if applicable), Design activity CAGE Code, Media Number (e.g., l of 2, 2 of 2) if there are multiple units per set and copy number of media or media set (if there is more than one copy being delivered).
- Media copy numbers shall distinguish each copy of the software media from its identical copies. Each time a new version of software is issued, new copy numbers, starting from 1, shall be assigned.

5.3.6.7.2 Firmware labeling.

Firmware shall be labeled on the device or, if the device is too small, on the next higher assembly, as follows:
- Where both the hardware device and the embedded code are controlled via a single engineering drawing, the part number representing the device with the code embedded shall comprise the label.
- Where the PCD for the source code consists of a Software product specification, both the unloaded device part number and the software identifier of the embedded code, including version number, shall comprise the label. In addition, the software identification(s) shall be labeled on an identification plate or decal located adjacent to the nameplate on the equipment containing the firmware.

5.3.6.7.3 NDI, COTS , and PDI labeling.

When a CI is wholly developed with private funding and modified to satisfy Government requirements, the CI shall be re-identified as a Government modified CI, and documented and controlled in accordance with the requirements of the contract.

5.3.7   Interface management.

5.3.7.1 Interface requirements.

The interface requirements for the system and its configuration items shall be identified as a part of the system engineering process. Those interface requirements which must be controlled by the Government during the development of the system shall be incorporated into the FCD and/or ACD as applicable. Such interface requirements defined in baselined specifications shall be subject to the configuration control requirements of this TOR. Prior to the PBL, the contractor shall be responsible for defining and controlling all interfaces below the ACD level. The contractor shall ensure the compatibility and interoperability among the various hardware, software and firmware components for which they are the design activity and between those components and the interfaces/components specified in the baselined configuration documentation. (See 6.3)

5.3.7.2 Requirements for an Interface Control Working Group (ICWG).

When required, the use of an ICWG will be specified by the contract and the interface control contractor will be identified. The contractor shall establish associate contractor agreements with interfacing contractors governing the conduct of interface control.

5.3.7.2.1 ICWG membership.

The contractor shall be responsible for providing a representative to the ICWG who is empowered to commit the contractor to specific interface actions and agreements; for assuring that the representative is present at all ICWG meetings; for providing draft interface control documentation at a specified period prior to the ICWG meeting where it will be discussed; for updating, releasing, and controlling interface control documentation

reflecting the ICWG decisions; and for distributing copies of such released interface control documentation to other ICWG participants.

5.3.7.2.2 ICWG Chairmanship.

The contractor designated as the interface control contractor shall act as the chair for the ICWG and shall be accountable to the Government to report interface problems as they are surfaced by the ICWG. The contractor shall be responsible for scheduling ICWG meetings; for providing the meeting space and administrative support; for distributing interface control documentation to be addressed at the upcoming ICWG; for conducting the ICWG meetings; for making interface decisions when they can be implemented within the current scope of the contracts of the participants; for coordinating ECPs as required; for recording and distributing the minutes of the ICWG meetings; and for ensuring that updated interface control documentation reflecting the ICWG decisions is distributed within the time frame agreed to by the affected participants. (See 6.3)

5.4   Configuration control.

Configuration control is the systematic proposal, justification, evaluation, coordination, approval or disapproval of proposed changes, and the implementation of all approved changes, in the configuration of CIs after establishment of the configuration baseline(s) for the CIs.

5.4.1   Purpose of configuration control.

The contractor shall implement a configuration control function that ensures regulation of the flow of proposed changes, documentation of the complete impact of the proposed changes, and release only of approved configuration changes into CIs and their related configuration documentation. Government configuration control begins with the establishment of the functional baseline and continues as further configuration baselines are established for the CIs, using the FCD, the ACD(s), and the PCD(s)contractually invoked by the Government. The contractors are responsible for configuration control of their respective Developmental Baseline. Configuration control continues throughout the life cycle of the CI. The following requirements shall apply only to the FCD, the ACD(s), and the PCD(s) which have been authenticated/contractually implemented by the Government.

5.4.2   Requirements for Engineering Change Proposals.

An Engineering Change Proposal shall be required for any changes to any government approved configuration documentation.

5.4.2.1 The engineering change process.

When a design change affects documentation baselined by the government, the contractor shall ensure the following actions at a minimum are included in their configuration control process:
* Determination of a need for the change.
* Establishment by the contractor of a classification of the engineering change as Class I or Class II.
* Review and evaluation of the change.
* Disposition of the change.
* Preparation of an ECP.
* Submittal of the ECP to the Government.
* Incorporation of approved (or concurred in) engineering changes in the documentation, including, when applicable, negotiation into the contract. Implementation of the change in accordance with the contract.

Note: Similar steps shall apply to requests for deviations.

5.4.2.2 Administrative requirements.

5.4.2.2.1 Classification of engineering changes.

An engineering change shall be classified as Class I or Class II by the, preparing contractor in accordance with this standard. Class I ECPS shall be referred to the Government for approval or disapproval. Classification disagreements shall be referred to the Government Program office for final decision. A proposed engineering change to a CI, or to any combination or discrete portion thereof, shall be determined to be Class I by

examining the factors below, as contractually applicable, to determine if they would be impacted as a result of implementing the change.

- The change shall be Class I if the FCD or ACD, once established, is affected to the extent that any of the following requirements would be outside specified limits or specified tolerances:
  – Performance.
  – Reduction of reliability, maintainability or survivability.
  – Weight, balance, moment of inertia.
  – Interface characteristics.
  – Electromagnetic characteristics.
  – Other technical requirements in the specifications.

Minor clarifications and corrections to FCD or ACD shall be requested only as an incidental part of the next Class I ECP and accompanying SCN or NOR, unless otherwise directed by the Government.

A change to the PCD, once established, will affect the FCD or ACD as described in 5.4.2.2.l or will impact one or more of the following:

- GFE .
- Reduction in Safety.
- Compatibility or specified interoperability with interfacing CIS, support equipment or support software, firmware spares, trainers or training devices/equipment or software.
- Configuration of hardware, software, firmware to the extent that retrofit action is required.
- Delivered operation and maintenance manuals for which adequate change/revision funding is not provided in existing contracts.
- Preset adjustments or schedules affecting operating limits or performance to such extent as to require assignment of a new identification number.
- Interchangeability, substitutability, or, replace ability as applied to CIS, and to all subassemblies and parts except the pieces and parts of non-reparable subassemblies.
- Sources of CIs or repairable items at any level defined by source-control drawings.
- Skills, manning, training, biomedical factors or human engineering design.
- Any of the following contractual factors are affected:
- Cost to the Government including incentives and fees.
- Contract guarantees or warranties.
- Contractual deliveries.
- Scheduled contract milestones.

5.4.2.2.2 Classifying engineering changes to a privately developed item.

An engineering change to a PDI shall be classified Class I when it affects the contractually specified form, fit, function, or logistics support of an item or factors in 5.4.2.2.l. When a greater degree of control is negotiated between the Government and the contractor, effects on other factors may be added to the effects specified in paragraph 5.4.2.2.1 that classifies an engineering change as Class I.

5.4.2.2.3 Content of Engineering Change Proposals (ECPs).

See 5.4.2.3.5 and 5.4.2.4.1.

5.4.2.2.3.1 Unrelated engineering changes.

A separate ECP shall be required for each engineering change which has its own distinct objective.

5.4.2.2.3.2 Revisions of ECPs.

An ECP shall be revised when alterations or changes to the initial ECP are necessary. The first revision to an ECP shall be identified by the entry of R1 in the revision block of the ECP. Further revisions of the ECP shall be identified by the entry of "R2", "R3", etc. The date of ECP shall be the submission date of the revision.

- Major revisions to an ECP shall be made as a complete revised and resubmitted package.
- Minor revisions to an ECP (such as those which correct errors, add or delete information, update pricing, or provide clarifications) may be made by attaching new or revised pages, indicating the new

date and revision level on each such page of the ECP. This will also necessitate changing the cover page date and revision level even if no other data on that cover sheet changed.

- In either case, the information which differs from the original ECP shall be clearly identified in a manner similar to the marking of change pages for specifications. The ECP should clearly include information as to whether the revision is a re- submittal (replacing the existing ECP in its entirety) or solely provides change pages and a revised cover page to the existing ECP.

5.4.2.2.3.3 Supporting data.

Formal ECPs shall be supported by drawings and other data (e.g., LSA data, detailed cost proposal data, test data and analyses) as specified in the contract to justify and describe the change and to determine its total impact including assessments of changes to system operational employment characteristics. When a life cycle cost and/or operation and support cost model has been included in the contract, the ECP shall also include the costs expected to result from the implementation of this change into all future production and spare items projected to be procured for the program and all projected operation and support costs for operation of the total inventory of items by the Government. A summary of any testing done by the contractor to validate concepts or new technology to be employed in the proposed engineering change shall be presented in the supporting data, and details of such test data shall be provided if it is vital to the decision regarding acceptance of the change.

5.4.2.2.3.4 Classified data

When practicable, the ECP should be unclassified. Classified data essential to the evaluation and disposition of an ECP shall be submitted separately in accordance with the approved security procedures and referenced in the unclassified portion of the ECP. The contractual DD Form 254 or DoD Contract Security Classification Specification applies.

5.4.2.3 Class I engineering change proposals.

Class I engineering changes should be limited to those which are necessary or offer significant benefit to the Government. Such changes are those required to:
- Correct deficiencies.
- Add or modify interface or interoperability requirements.
- Make a significant and measurable effectiveness change in the operational capabilities or logistics supportability of the system or item.
- Effect substantial life cycle costs/savings, or
- Prevent slippage in an approved production schedule.

5.4.2.3.1 Class I ECP decisions.

5.4.2.3.1.1 Target for technical decision on Class I ECPS.

The criticality of the need for decision will dictate the actual processing time for ECPS. Emergency and urgent ECPS should be proposed based upon the targets below unless otherwise agreed to between the contractor and the Government. Processing targets for routine ECPS will be tailored to maximize cost effectiveness, recognizing the program, system, and ECP complexity. The target for technical decision on Class I ECPS assigned the various priorities (defined in paragraph 5.4.2.3.4) will be the following:
- Emergency 48 hours
- Urgent 30 calendar days
- Routine 90 calendar days

5.4.2.3.1.2 ECP authorization.

Unless otherwise specified by the Government, receipt of contractual authorization shall constitute the sole authority for the contractor to implement a Class I change. Authorization of the change granted by the Government will include reference to the ECP by number, revision (if applicable) , and date. Such authorization will normally not occur until the Government has performed a review for technical adequacy and supportability.

5.4.2.3.1.3 Class I compatibility engineering changes.

This category of change is intended to allow expeditious corrective action when the need for a change has been discovered during system or item functional checks or during installation and checkout. The contractor shall notify the Government by written message within 48 hours after determining that a compatibility change is necessary. The message shall define the need for a compatibility change and identify factors that will be impacted, including estimated costs and schedules. Unless otherwise prohibited by the contract, corrective action may then be implemented immediately by the contractor to resolve such incompatibilities, but only for the specific item(s) situated in the location at which the deficiency was originally discovered. All aspects of the compatibility definition must apply. In addition, a Class I compatibility ECP shall be required within 30 days after initial notification. Where further action is necessary due to "lead time" considerations, the contractor may initiate procurement or manufacturing action and shall advise the Government with a change message referencing the serial number(s) and locations of additional items involved. The contractor assumes total risk for implementation of such a change prior to Government authorization, except in those cases where the Government caused the incompatibility.

5.4.2.3.1.4 Disapproval of ECPS.

When the Government disapproves an ECP, the originator will be notified in writing within 30 calendar days of the decision and will be given the reason(s) for the disapproval.

5.4.2.3.2 Class I ECP justification codes.

Justification codes corresponding with the criteria necessary for beneficial engineering changes are listed below. If more than one of these codes are applicable, the one which is the most descriptive or significant shall be assigned to the ECP.

- Interface (Code B). Code B shall be assigned to an engineering change proposed to eliminate incompatibility between CIs.
- Compatibility (Code C). Code C shall be assigned to an engineering change to correct a deficiency with the following characteristics:
  1) The need for the change has been discovered during the system or item functional checks or during installation and checkout and is necessary to make the system or item work.
  2) By assigning the compatibility code the contractor is declaring that the effort required to accomplish the change is considered to be within the scope of the existing contract except for changes caused by the Government.
  3) Contractual coverage completing the formal documentation of the engineering change will not reflect an increase in contract price for the corrective action in production and to delivered items in-warranty or otherwise stipulated in the contract.
- Correction of deficiency (Code D). Code D shall be assigned to an engineering change which is required to eliminate a deficiency, unless a more descriptive separate code applies, Such separate codes are used to identify deficiencies of the nature of safety, interface, compatibility.
- Operational or logistics support (Code O). Code O shall be assigned to an engineering change which will make a significant effectiveness change in operational capabilities or logistics support.
- Production stoppage (Code P). Code P shall be assigned to an engineering change which is required to prevent slippage in an approved production schedule. This code applies when production to the current configuration documentation either is impracticable or cannot be accomplished without delay.
- Cost reduction (code R). Code R shall be assigned to An engineering change which will provide a net total life cycle cost savings to the Government, but which is not being submitted pursuant to the Value Engineering clause of the contract. The savings in life cycle cost should include all effects on cost and price for the effort and requirements covered by the contract(s) currently in effect for this contractor, plus the costs resulting from necessary associated changes in delivered items, and logistics support.
- Safety (Code S). Code S shall be assigned to an engineering change for correction of a deficiency which is required primarily to eliminate a hazardous condition. When this code is assigned, a system hazard analysis shall be included with the ECP. (See 6.6)
- Value engineering (VE) (Code V). Code V shall be assigned to an engineering change which will effect a net life cycle cost reduction and which is submitted pursuant to the VE clause of the contract.

5.4.2.3.3 Class I ECP types.

There are two types of Class I ECPs, preliminary and formal. The type of Class I ECP appropriate to the circumstances shall be selected in accordance with the following definitions and guidelines.

5.4.2.3.3.1 Preliminary change proposal.

A preliminary change proposal is the type which may be submitted to the Government for review prior to the availability of the information necessary to support a formal ECP. It shall include a summary of the proposed change, its impact on related areas, and a justification.

5.4.2.3.3.1.1 Use of preliminary ECPs (Type P).

A preliminary ECP may be prepared and submitted for one of the following purposes:
- To furnish the Government with available information in order to permit a preliminary evaluation relative to the merits of the proposed change (e.g. installation of a proposed change for the purpose of evaluation and testing prior to making a final decision to proceed with a proposed change),
- To provide a determination regarding the desirability of continuing expenditures required to further develop the proposal,
- To provide alternative proposals,
- To supplement a message relative to an emergency or urgent priority ECP when it is impracticable to submit a formal ECP within 30 calendar days,
- To propose a software change prior to the development of the actual coding changes and to obtain Government approval to proceed with software engineering development.

5.4.2.3.3.2 Use of Formal ECP (Type F).

A formal ECP is the type which provides engineering information-and other data in sufficient detail to support formal change approval/contractual implementation.

5.4.2.3.4 Class I engineering change priorities.

A priority shall be assigned to each Class I ECP based upon the following definitions. The assigned priority will determine the time frame in which the ECP is to be reviewed, evaluated, ordered, and implemented. The proposed priority is assigned by the originator and will stand unless the Government has a valid reason for changing the priority.

1. **Emergency**. An emergency priority shall be assigned to an change proposed for any of the following:
   a. To effect a change in operational characteristics which, if not accomplished without delay, may seriously compromise national security;
   b. To correct a hazardous condition which may result in fatal or serious injury to personnel or in extensive damage or destruction of equipment. (A hazardous condition usually will require withdrawing the item from service temporarily, or suspension of the item operation, or discontinuance of further testing or development pending resolution of the condition.); or
   c. To correct a system halt (abnormal termination) in production environment such that CSCI mission accomplishment is prohibited.
2. **Urgent**. An urgent priority shall be assigned to an engineering change proposed for any of the following reasons:
   a. To effect a change which, if not accomplished expeditiously, may seriously compromise the mission effectiveness of deployed equipment, software, or forces; or
   b. To correct a potentially hazardous condition, the uncorrected existence of which could result in injury to personnel or damage to equipment. (A potentially hazardous condition compromises safety and embodies risk, but within reasonable limits, permits continued use of the affected item provided the operator has informed of the hazard and appropriate precautions been defined and distributed to the user.); or
   c. To meet significant contractual requirements (e.g., when lead time will necessitate slipping approved production or deployment schedules if the change was not incorporated) ; or
   d. To effect an interface change which, if delayed, would cause a schedule slippage or increase cost; or

e. To effect a significant net life cycle cost savings to the Government, as defined in the contract, through value engineering or through other cost reduction efforts where expedited processing of the change will be a major factor in realizing lower costs.

f. To correct unusable output critical to mission accomplishment;

g. To correct critical CI files that are being degraded; or

h. To effect a change in operational characteristics to implement a new or changed regulatory requirement with stringent completion date requirements issued by an authority higher than that of the functional proponent.

3. **Routine**. A routine priority shall be assigned to a proposed engineering change when emergency or urgent is not applicable.

5.4.2.3.4.1 Expediting Class I engineering changes with priority of emergency or urgent.

ECPs carrying a priority of emergency shall, and ECPS carrying a priority of urgent may, be reported to the Government by telephone, message, personal contact, electronic transmission or other expeditious means. All communications shall be identified by the ECP number. If the initial communication regarding a proposed change was by other than written message, it shall be confirmed by written message in the appropriate format within 24 hours, and followed by a formal ECP within 30 days after the first communication unless otherwise specified by the Government. However, if it is impractical to complete a formal ECP within 30 days due to the necessity for extensive development, a preliminary ECP may be submitted within a 30 day Period followed by a formal ECP at a specified interval thereafter. The preliminary or formal ECP shall carry the same ECP number as the written message and shall include reference to:

- Method and date of the original communication.
- Individuals contacted.
- Source of resultant contractual direction, if any.

5.4.2.3.5 Format for Class I engineering changes.

Contractor format is acceptable for proposing Class I engineering changes, as long as ECP information presented in TOR – CM Data Items is fully presented. Unclear or incomplete information delays government configuration management processing of contractor requested ECPs.

5.4.2.3.6 Related engineering changes.

5.4.2.3.6.1 Related engineering changes-single prime.

A desired engineering change in one item (the basic engineering change) may require related engineering changes in other items in order to retain (or attain) either an interface match or compatibility and interoperability of associated items. When such an engineering change is proposed and when the basic item and other items affected by related engineering changes are the responsibility of a single prime contractor, the ECP package shall include both the basic and all such related engineering changes.

5.4.2.3.6.2 Related engineering changes - single prime multiple procuring activities .

The basic ECP number shall be assigned to the ECP applicable to the item which is the immediate objective of the desired ECP. Related ECPS submitted to the Government shall be identified by the basic number plus a separate dash number for each procurement activity.

5.4.2.3.6.3 Related engineering changes - separate primes.

When a desired engineering change in one item (the basic engineering change) requires related engineering changes in other items which are the responsibility of other prime contractors who are participating in a specific item development or production program, the basic ECP and its impact on other items shall be coordinated by the originating contractor as required prior to submission to the Government. Coordinating contractors are not required to provide cost and pricing data to other contractors. The technical basis for the change and technical effects of the change shall be coordinated. The coordinated basic ECP shall include data showing the extent of coordination and its results, when applicable and available, to the related ECPS of the other prime contractors.

Likewise, the basic and each related ECP, when submitted by its separate prime, shall cross-reference the basic and other related ECPS.

5.4.2.3.6.4 Same engineering change prime/subcontractor coordination.

When the contractor, as the prime contractor to the Government for an item, is also a subcontractor to another prime contractor(s) for that same item, initiates an ECP on that item, he shall coordinate the ECP with the other prime contractor(s) Prior to submission. The ECP shall include data on the extent and results of such coordination.

5.4.2.3.6.5 Same engineering change several contractors.

Unless otherwise specified, when the Government has contracts with two or more prime contractors for the same item, the Government will conduct such coordination of ECPS as it deems necessary.

5.4.2.4   Class II engineering changes.

An engineering change which impacts none of the Class I factors specified in 5.4.2.2.1 shall be classified as a Class II engineering change. Generally, Class II ECPs are limited to administrative/documentation clarifications/corrections.

5.4.2.4.1 Class II engineering change format.

- Contractor format is acceptable for proposing Class II engineering changes. As in Class I ECPs, information shall be clearly presented to avoid processing delays.

5.4.2.4.2 Class II justification codes.

The justification codes for Class I engineering changes need not be applied to a Class II engineering change.

5.4.2.4.3 Concurrence in Class II changes.

Unless otherwise specified by the Government, or unless 5.4.2.4.4 or 5.4.2.4.5 applies, Government review of Class II changes during production will consist of a technical evaluation of the change and of material substitutions to support concurrence in classification recommendations. The contractor shall obtain Government concurrence prior to or concurrent with the release of any Class II change. The contractor assumes total risk for implementation of changes prior to receiving notification of Government concurrence.

.5.4.2.4.4 Approval of Class II changes.

In the event the Government has required by contract that it approve each Class II change, the contractor shall not implement the change until it is approved by the Government.

5.4.2.4.5 Non-custody of the original drawings.

When the contractor or his subcontractors do not have custody of the original drawings delineating the detail design, and when compliance with such drawings is a contract requirement, each Class II engineering change is subject to approval by the Government prior to implementation as specified in the contract.

5.4.3   Requirements for Requests for Deviation (RFD).

The contractor shall not manufacture items for acceptance by the Government that incorporate a known departure from requirements, unless a request for a deviation has been approved in accordance with the requirements of this standard. Authorized deviations are a temporary departure from requirements and do not constitute a change to the FCD, ACD, or PCD. Before or after manufacture of an item, if a contractor considers it necessary to temporarily depart from the requirements, the contractor may request a deviation. Deviation requests which include the use of parts/materials not in conformance with the approved engineering documentation (e.g. repairs) must identify the unique identity assigned to discrepant parts/materials and certify that status accounting records and all other associated documentation shall indicate that alternate identification for the specific units for which relief is being requested in the RFD. Deviations do not apply to software code listings. Where it is determined that a change should be permanent, a Class I or Class II engineering change must be processed in accordance with this standard.

5.4.3.1 Restrictions on deviations.

Unless unusual circumstances exist, critical deviations and deviations which would affect service operation, logistic interoperability, or maintenance (e.g., repair parts, operation or maintenance procedures, or compatibility with trainers or test sets) shall not be requested. The effectively of the request for deviation normally should not include the entire remaining number of deliverable units on the contract; if that is the case, an engineering change should be submitted.

5.4.3.2 Recurring deviations.

Submittal of recurring deviations is discouraged and shall be minimized. If a proposed deviation is recurring (a repetition or extension of a previously approved deviation), it is probable that either the requirements of the documentation are too stringent or the corrective action of the manufacturer was ineffective. If it is necessary for a contractor to request a deviation for the same situation with the same item more than two times, then the need for an engineering change, rather than deviation, shall be addressed between the Government and the contractor.

5.4.3.3 Classification of deviations.

Each request for deviation shall be designated as critical, major, or minor by the originator in accordance with this standard. Classification disagreements shall be referred to the Government Program Office for decision.

5.4.3.3.1 Minor.

A deviation shall be designated as minor when:
- The deviation consists of a departure which does not involve any of the factors listed in 5.4.3.3.2 or 5.4.3.3.3 or
- When the configuration documentation defining the requirements for the item classifies defects in requirements and the deviations consist of a departure from a requirement classified as minor.

5.4.3.3.2 Major.

A deviation shall be designated as major when:
- The deviation consists of a departure involving:
  (1) health; (2) performance; (3) interchangeability, reliability, survivability, maintainability, or durability of the item or its repair parts; (4) effective use or operation; (5) weight; or (6) appearance (when a factor) or
- When the configuration documentation defining the requirements for the item classifies defects in requirements and the deviations consist of a departure from a requirement classified as major.

5.4.3.3.3 Critical.

A deviation shall be designated as critical when:
- The deviation consists of a departure involving safety or
- When the configuration documentation defining the requirements for the item classifies defects in requirements and the deviations consist of a departure from a requirement classified as critical.

5.4.3.4 Format.

Contractor format for the Request for Deviation (RFD) is acceptable. Each RFD shall contain all information (presented in TOR Configuration Management Data Items) required for the government to disposition it as expeditiously as practicable.

5.4.3.5 Disposition of deviations.

Unless otherwise specified in the contract, requests for deviations should be approved or disapproved within 30 calendar days of receipt by the Government.

5.4.4   Part substitutions.

Unless otherwise specified by contract, part substitution for parts identified in the government approved configuration documentation of an item from the product baseline through the remainder of the item's life cycle shall conform as follows:

- Substitution of a non-repairable part for an item for which the contractor has configuration documentation custody shall require a Class I or Class II engineering change or a request for deviation or waiver when:
  - The part is identified as an authorized substitute or superseding part in a military specification or standard; and the part will not be installed in equipment to be submitted for verification and reliability demonstration tests.
- Substitution of a non-repairable part shall require a Class II engineering change when:
  - The part substituted is determined, by the contractor having configuration documentation custody over the item, to be a preferred part over the original; or the contractor does not have configuration documentation custody.
- Part substitutions which do not meet the requirements of 5.4.5a or 5.4.5b and for which a permanent change is not desired shall require submission of a Request for Deviation (RFD).
- All other parts substitutions shall be subject to the Class I or Class II engineering change applicable.

5.4.5   Requirements for Specification Change Notices (SCNs).

In accordance with the requirements of the contract, the contractor shall, concurrent with the preparation of an ECP, prepare a separate proposed Specification Change Notice for each specification which would require revision if the ECP were approved. The SCN(s) shall be submitted to the Government with the ECP for approval and authorization, or disapproval. In the situation discussed in paragraph 5.4.2.3.6.3 (Related engineering changes - separate primes), the originating contractor shall prepare and coordinate the SCN(s) with other prime contractors along with the ECP. Errors of a minor nature (such as typographical errors, punctuation, etc.) shall not be corrected, except as an incidental part of the next technically required ECP and accompanying proposed SCN affecting that CI specification. (See 4.3.2 and 6.3) SCNs shall be prepared in accordance with the requirements delineated in the contract DD Form 1423.

5.4.5.4 Approved SCN.

The contractor will receive approved SCNs from the Government concurrent with contractual authorization, and shall use the approved SCNs as authorization to update the specifications in accordance with the approved SCNs. An approved SCN also provides a summary listing of pages affected by all previously approved changes to that particular revision of the specification. SCNS are not cumulative insofar as transmittal of change pages from previous change is concerned, and changes distributed with previous SCNs remain in effect unless changed or canceled by an SCN of later issue. However, the summary of current changes shall be a cumulative summary as of the date of approval of the latest SCN.

5.4.5.5 Changed pages.

Updated and reissued pages shall be complete reprints of pages suitable for incorporation by removal of old pages and insertion of new pages. All portions affected by the change shall be indicated by a symbol in the margin adjacent to the change and encompassing all changed portions. When changed pages are issued for specifications with pages printed on both sides of a sheet, and only the page on side of a sheet is affected by the change, both sides of the sheet shall be reissued. The unchanged side shall be reprinted without change and shall not carry the date of the change or be included in the change summary as being affected by the change.

5.4.6   Requirements for Notices of Revision (NORs).

The Notice of Revision shall be prepared and utilized by contractors to describe the exact change(s) to be made to each drawing, associated list, or other affected document when specified as a data requirement in the contract DD Form 1423. NORs shall be prepared in contractor format containing all information required to disposition the NOR and its associated ECP. NORs are normally applicable where documents affected by the ECP are not controlled by the ECP preparing activity.

5.5   Configuration Status Accounting (CSA).

5.5.1   Purpose of CSA.

The purpose of CSA is to assure accurate identification of each CI, and delivered unit so that the necessary logistics support elements can be correctly programmed and made available in time to support the CI. An adequate and accurate CSA will enhance program and functional manager's capabilities to identify, produce, inspect, deliver, operate, maintain, repair, refurbish, etc., CIS in a timely, efficient, and economical manner in satisfying their assigned responsibilities.

5.5.2   CSA requirements .

The contractor shall implement an information system capable of meeting contractual requirements for CSA.

5.5.3   Preferred information system.

The contractor shall provide CSA information from the contractor's information system to the maximum extent possible. Where information beyond the existing contractor system is required by the Government to be included in data base or in the formatted output, such additional information shall be provided as supplements to the existing system without disrupting the existing system or requiring the generation of a completely new system for the Government.

5.5.4   Retention of historical data base.

The contractor shall retain a complete historical record of all the information required by the Government to be stored in the system. Such historical information shall be formatted and maintained in such a manner that it can readily be copied, in total or by specific elements identified by the Government, for transfer in a format specified in the contract.

5.5.5   CSA data elements.

Deleted

5.5.6   Contractor focal point .

The contractor shall identify a focal point for the CSA system to interface with the data base users.

5.5.7   CSA analysis requirements.

The contractor shall ensure the validity of their CSA data. When potential or actual problems or delinquencies which impact the Government are detected, the contractor shall contact the Government within one business day to establish a course of action to rectify the situation. In addition:
- Analysis shall be performed to detect trends in the problems reported.
- Corrective actions shall be evaluated to: (1) verify that problems have been resolved, adverse trends have been reversed, and changes have been correctly implemented in the appropriate processes and products, and (2) to determine whether additional problems have been introduced.

5.5.8   Reporting accomplishment of retrofit changes.

When units already accepted by the Government are returned to the contractor, either for prolonged use or for specific retrofit action, the contractor shall document the incorporation of all retrofit changes to those units in his custody and shall report the status of those units in the CSA records

5.6   Configuration audits.

FCA and PCAs will normally be conducted by the Government prior to acceptance of a CI and prior to establishing the PBL.

5.6.1   Contractor participation and responsibilities.

The contractor shall be responsible for supporting Government conducted configuration audits in accordance with the following requirements except as amended by the contract.

5.6.1.1 Subcontractors and suppliers .

The contractor shall be responsible for insuring that subcontractors, vendors, and suppliers participate in Government configuration audits, as appropriate.

5.6.1.2 Location.

- Unless otherwise specified in the Contract Statement of Work (SOW), the configuration audits shall be conducted at the contractor's facility or at a designated subcontractor facility, if approved by the Government. Accordingly, the contractor shall be required to provide the necessary resources and material to perform the audit effectively. If a Configuration Management Plan is a requirement of the contract DD Form 1423, it shall include all information required to assure the proper conduct of configuration audits.

5.6.1.3 Contractor requirements.

The contractor shall be responsible for establishing the time, place, and agenda for each configuration audit in consonance with the master milestone schedule, subject to coordination with the Government. This should be accomplished sufficiently in advance of each audit to allow adequate preparation for the meeting by both the contractor and the Government: In addition, the contractor shall:

- Insure that each configuration audit schedule is compatible with the availability of the necessary information and contract articles, e.g., system engineering data, trade study results, producibility analysis results, risk analysis results, specifications, manuals, drawings, reports, hardware, software, firmware or mockups.
- Designate a co-chairperson for each configuration audit.
- Participating contractor and subcontractor personnel or those chosen to make presentations shall be prepared to discuss in technical detail any of the presented material within the scope of the audit.
- Provide an acceptable method to record inputs to official meeting minutes.
- Minutes shall be recorded and shall consist of significant questions and answers, action items, deviations, conclusions, recommended courses of action resulting from presentations or discussions. Conclusions from discussions conducted during side meetings shall be summarized in the main meeting at an appointed time, and appropriate comments shall be read into the official minutes.
- Recommendations not accepted should also be recorded together with the reason for non-acceptance. The minutes of each daily session shall be available for review by both the contractor and Government personnel at the beginning of the next day's session. The minutes of the overall audit shall be available for review by the Government prior to the departure of the audit team from the audit location. Official acknowledgement by the Government of the accomplishment of the audit shall not be interpreted as approval of statements made in the minutes or of matters discussed at the audit and does not relieve the contractor from requirements which are part of the contract.
- Record all discrepancies identified by the audit Team (See Figure 3a - 3b for a sample Audit Action Item List) and process each one, as a part of the audit activities, until it is closed out or suitable residual tasks, including identification of responsible activities and suspense's, have been established which will lead to the close out of the discrepancy/action item. Clearly record all action items in the minutes and identify both the Government and/or contractor action required for each action item's resolution.
- Publish the official minutes.

5.6.1.4 Government participation.

The Government will:

- Provide a co-chairperson.
- Provide to the contractor prior to the audit the name, organization, and security clearance of each participating individual.
- Review the daily minutes and ensure that they reflect all significant Government inputs.
- Provide formal acknowledgement to the contractor of the accomplishment and results of each configuration audit after receipt of configuration audit minutes. The Government will evaluate the results of each configuration audit in accordance with the following identifiers:

Approval -- to indicate that the audit was satisfactorily completed.

Contingent approval -- to indicate that the audit is not considered accomplished until the satisfactory completion of resultant action items.

Disapproval -- to indicate that the audit was seriously inadequate.

5.6.2   Functional Configuration Audit [FCA).

A Functional Configuration Audit shall be conducted for each configuration for which a separate development or requirements specification has been baselined, except as otherwise required by contract, and for the overall system, if required by the contract. The objective of the FCA shall be to verify the configuration item's and system's performance against its approved configuration documentation. Test data for the FCA be that collected from the test of the configuration of the item that is to be formally accepted or released for production prototype or preproduction article). If a prototype or preproduction article is not produced, the test data shall be that collected from test of the first production article. Subject to prior Government approval, the FCA for complex items shall be conducted in increments. In such cases, a final FCA may be conducted to ensure that all requirements of the FCA have been satisfied. In cases where item verification can only be completely determined after system integration and testing, the final FCA shall be conducted using the results of these tests. See Figures 5.6.2-1a and 1b Audit Action Item List.

```
            AUDIT ACTION ITEM LIST - PART I
              PROBLEM IDENTIFICATION

 FCA _____    PCA _____        CONTROL NO._____

 CONTRACTOR                         CONTRACT NUMBER
 _____          _____
 _____
 _____          CAGE CODE
 _____
                                    _____

 ACTION ITEM ORIGINATOR      ORGANIZATION _____
 NAME    _____                 _____
 PHONE   _____

 IDENTIFICATION OF ITEM BEING AUDITED

 CONFIGURATION ITEM NONMENCLATURE_____
 PART NUMBER_____   SERIAL NUMBER_____

 SUBELEMENT AFFECTED        _____
                           _____

 CONTRACT REQUIREMENT(S) AFFECTED

         DOCUMENT              PAGE          PARAGRAPH
 _____    _____    _____
 _____    _____    _____
 _____    _____    _____

 NARRATIVE DESCRIPTION OF PROBLEM
 _____
 _____
 _____
 _____
 _____
 _____
 _____
 _____
 _____

 ALTERNATIVE APPROACH (OPTIONAL)
 _____
 _____
 _____
 _____
 _____
 _____

 FORWARDED BY:  GROUP LDR _____ TEAM LDR _____
```

Figure 5.6.2-1a Sample Audit Action Item List

```
          AUDIT ACTION ITEM LIST - PART II
                PROBLEM RESOLUTION


FCA _____        PCA _____        CONTROL NO._____

CONTRACTOR'S RESPONSE
_____
_____
_____
_____
_____

OPEN (Follow-up action required          CLOSED (No follow-up required)

FIRST ACTION      ASSIGNED TO_____  SUSPENSE_____
_____
_____
_____

SECOND ACTION     ASSIGNED TO_____  SUSPENSE_____
_____
_____
_____
_____

CONCURRENCE SIGNATURES  _____   _____
                            CONTRACTOR             GOVERNMENT


                         RESOLUTION
_____
_____
_____
_____
_____
_____
_____

             GOVERNMENT ACTION ITEM CLOSEOUT
                     NAME        SIGNATURE        DATE
ORIGINATOR AUDIT TEAM _____   _____   _____

    GOVERNMENT        _____   _____   _____

    CONTRACTOR        _____   _____   _____
```

Figure 5.6.2-1b. Sample Audit Action Item List (continued)

5.6.2.1 Contract requirements.

The schedule dates, and actual accomplishment dates for the FCAs shall be recorded in the CSA system. The CI, or system, shall not be audited separately without prior Government approval of the FBL and ABL of the CI, or system, involved. In addition, the contractor shall make the final draft copy of the CI product specification available to the Government for review prior to the FCA, as specified in the contract.

5.6.2.2 Contractor responsibility.

Prior to the audit date, the contractor shall provide the following information to the Government:
- Contractor representation.
- Identification of items to be audited:
  - Nomenclature.
  - Specification identification number.
  - CI identification.
- Current listing of all deviations/waivers against the CI, either requested of or approved by the Government. Status of test programs to test configuration items with automatic test equipment (when applicable)
- The contractor shall provide a matrix for each CI at FCA that identifies the requirements of sections three and four of the specifications; includes a cross reference to the test plan, test procedures, and test report, results of demonstrations, inspections, and analyses for each requirement; and identifies each deficiency by deficiency report number. The matrix shall be made a part of the FCA minutes.
- The contractor shall prepare an FCA check sheet which identifies documents to be audited and tasks to be accomplished at the FCA for the CI. A sample FCA Checklist is shown in Figure 5.6.2.3-1.

5.6.2.3 Verification procedures and requirements.
- The contractor shall provide the FCA team with a briefing for each CI being audited and shall delineate the test results and findings for each CI. As a minimum, the discussion shall include CI requirements that were not met, including a proposed solution to each item, an account of the ECPs incorporated and tested as well as proposed, and a general presentation of the entire Cl test effort delineating problem areas as well as accomplishments. The audit should also include:
  a. The contractor's test procedures and results shall be reviewed for compliance with specification requirements.
  b. The following testing information shall be available for the FCA team:
  - Test plans, specifications, descriptions, procedures, and reports for the CI.
  - A complete list of successfully accomplished tests during which pre-acceptance data was recorded.
  - A complete list of successful tests if detailed test data are not recorded.
  - A complete list of tests required by the test requirements but not yet performed. (To be performed as a system or subsystem test.)
  - Preproduction test results.
- An audit of formal test plans, specifications, and procedures shall be made and compared against the official test data. The results shall be checked for completeness and accuracy. Deficiencies shall be documented and made a part of the FCA minutes. Interface requirements and the testing of these requirements shall be reviewed. Completion dates for all discrepancies shall be clearly established and documented.
- For those requirements which cannot be completely verified through the use of testing, the FCA shall determine whether adequate analyses or simulations have been accomplished and whether the results of the analyses or simulations are sufficient to insure that the CI meets the requirements in the specification. All ECPS that have been approved shall be reviewed to ensure that they have been technically incorporated and verified.
- An audit of the test reports shall be performed to validate that the reports are accurate and completely describe the CI tests. Test reports, procedures, and data used by the FCA team shall be made a matter of record in the FCA minutes.
- A list of the contractor's internal configuration documentation of the HWCI shall be reviewed to insure that the contractor has documented the physical configuration of the HWCI for which the test data are verified.
- Drawings of the CI parts which are to be provisioned shall be selectively sampled to assure that test data essential to manufacturing are included on, or furnished with, the drawings.
- CIS which fail to pass quality requirements are to be analyzed as to the cause of failure to pass. Appropriate corrections shall be made before a CI is subjected to a re-verification.
- Acknowledge accomplishment of partial completion of the FCA for those CIS whose verification is contingent upon completion of integrated system testing.

FCA CHECKLIST

NOMENCLATURE _____

CI IDENTIFIER _____ DATE _____

CONTRACTOR REQUIREMENTS	YES	NO
1. Deviation List Prepared	_____	_____
2. Verification Test Procedures Submitted	_____	_____
3. Verification Testing Completed	_____	_____
4. Verification Test Results Compiled & Available	_____	_____
5. Facilities for Conducting FCA Available	_____	_____
6. Verification Test Procedures Reviewed and Approved	_____	_____
7. Verification Testing Witnessed	_____	_____
8. Verification Test Data and Results Reviewed and Approved	_____	_____

COMMENTS _____

_____

_____

_____

_____

_____

Figure 5.6.2.3-1 Sample FCA Checklist

- For CSCIs the following additional requirements shall apply:
  - Review data base characteristics, storage allocation data and timing, and sequencing characteristics for compliance with specified requirements.

–   Review all documents which comprise or describe the contents or the use of the software product for format and completeness. (e.g., SPS, User's Manual, VDD)
–   Review the records that reflect the changes made to the developmental configuration for the CSCI.
–   Review the listing of all versions of the developmental and non-developmental software, firmware for the CSCIS that are in the software library.
–   Review the findings of all internal CM and software, firmware QA audits of the CSCI.
–   Preliminary and Critical Design Review (CDR) minutes shall be examined to ensure that all findings have been incorporated, completed and all action items are closed.

5.6.2.4 Post-audit actions.

After the FCA is completed, contractor shall:
*   a. Publish copies of the FCA minutes.
*   b. Record the accomplishment and results of the FCA in the CSA Record for each CI audited.
*   c. Accomplish residual tasks for which they were identified as the responsible activity.

5.6.2.5 FCA Certifications.

A sample FCA certification package is shown in Figures 5.6.3-1a through 5.6.3-1g. When specified in the contract, a Configuration Audit Summary Report, consisting of the applicable information of the certification package shall be required. (See 6.3)

5.6.3   Physical Configuration Audit (PCA).

The PCA shall be conducted on the first production unit. The PCA shall be formal examination of the as-built configuration of a CI against its design documentation. The PCA can be conducted on down stream SRUs if the as designed is same as first production unit. The PCA for a CI shall not be started unless the FCA for the CI has already been accomplished or is being accomplished concurrent with the PCA. After successful completion of the audit and the establishment of a PBL all subsequent changes are processed by formal engineering change action. The PCA also determines that the acceptance testing requirements prescribed by the documentation is adequate for acceptance of production units of a CI by quality assurance activities. The PCA includes a detailed audit of engineering drawings, specifications, technical data, tests utilized in production of CIS, and design documentation, listings, and operation and support documents for CSCIS. The PCA shall include audit of the released engineering documentation and quality control records to make sure the as-built or as-coded configuration is reflected by this documentation. For software, firmware the product specification, Interface Design Document, and VDD shall be a part of the PCA.
*   The PCA shall be conducted on a unit of the item selected jointly by the Government and the contractor.
*   Satisfactory completion of a PCA and approval of the product specification are necessary for the Government to establish the PBL for a CI.

```
      FCA CERTIFICATION PACKAGE
                for

   CI IDENTIFIER(s)_____

   CONTRACT NO.    _____



PRIME CONTRACTOR:                 EQUIPMENT MANUFACTURERS:

_____              _____

_____              _____

_____              _____



APPROVED BY _____     APPROVED BY _____
          (CONTRACTOR)                     (GOVERNMENT)



DATE    _____          DATE  _____
```

Figure 5.6.3-1a. Sample FCA Certification Package

```
SCOPE/PURPOSE


  SCOPE:


  Functional Configuration Audit (FCA) was conducted on the following
  Configuration Item:

   CI Identifier       Nomenclature           Part No.              Serial No.






  PURPOSE: The purpose of this FCA was to verify that the configuration item's
  performance complied with the Development Specification.
```

Figure 5.6.3-1b. Sample FCA Certification Package (Continued)

```
┌─────────────────────────────────────────────────────────────────┐
│                                                                   │
│               FCA CERTIFICATION SHEET NO. 1                       │
│                 (For Equipment/Computer Software)                 │
│                                                                   │
│                                              Date:_____         │
│   Contract:_____                      │
│   Contractor: _____                       │
│   CI Identifier: _____                       │
│                                                                   │
│                                                                   │
│   Verification Test Procedures and Results.  The verification test/analysis │
│   results have been reviewed to ensure that testing is adequate, properly │
│   done, and certified.  (All test procedures and interface documents shall be │
│   reviewed to assure that the documents have been approved by the Government. │
│   All test data sheets shall be reviewed to assure that the test was witnessed │
│   by a representative of the Government.)                          │
│                                                                   │
│                                                                   │
│                                                                   │
│   Attached is a list of the documents reviewed.                   │
│                                                                   │
│                                                                   │
│   Check One                                                       │
│                                                                   │
│         ☐   Procedures and results reviewed satisfy the requirements and │
│             are accepted.  See Attachment ___ for comments.       │
│                                                                   │
│                                                                   │
│         ☐   Attached is a list of deficiencies.                   │
│                                                                   │
│   Signature(s) of FCA Team Member(s)                              │
│                                                                   │
│   *_____          _____   │
│                                                                   │
│    _____          _____   │
│                                                                   │
│    _____          _____   │
│                                                                   │
│    _____          _____   │
│                                                                   │
│    _____          _____   │
│                                                                   │
│    _____          _____   │
│                                                                   │
│   * Sub-Team Chairperson                                          │
│                                                                   │
│                                                                   │
│                                                                   │
└─────────────────────────────────────────────────────────────────┘
```

Figure 5.6.3-1c. Sample FCA Certification Package (Continued)

```
┌─────────────────────────────────────────────────────────────────────┐
│                                                                     │
│              FCA CERTIFICATION SHEET NO. 2                          │
│                (For Equipment/Computer Software)                    │
│                                                                     │
│  Contract: _____  Date:_____        │
│  Contractor: _____                     │
│  CI Identifier: _____                        │
│  Review of Deviations.  A review of all deviations to military     │
│  specifications and standards that have been approved.  The purpose│
│  is to determine the extent to which the equipment(s)/computer     │
│  software                                                          │
│  undergoing FCA vary from one application specifications and       │
│  standards and                                                     │
│  to form a basis for satisfactory compliance with these           │
│  specifications and                                                │
│  standards.  In accordance with this paragraph, all applicable     │
│  deviations                                                        │
│  have been reviewed with the following results:                    │
│                                                                     │
│  Check One                                                         │
│                                                                     │
│        ┌───┐   The equipment(s)/computer software listed on        │
│        │   │   Certification Sheet                                 │
│        └───┘   No. 1 of this report complies with all applicable   │
│                specifications                                       │
│                and standards.  See Attachment ___ for comments.    │
│                                                                     │
│        ┌───┐   Attached is a summary of FCA discrepancies.         │
│        │   │                                                       │
│        └───┘                                                       │
│                                                                     │
│  Signature(s) of FCA Team Member(s)                                │
│  *                                                                 │
│  _____    _____       │
│                                                                     │
│  _____    _____       │
│                                                                     │
│  _____    _____       │
│                                                                     │
│  _____    _____       │
│                                                                     │
│  _____    _____       │
│                                                                     │
│  * Sub-Team Chairperson                                            │
│                                                                     │
│   A.  Deviation Review Team Instructions.  All approved deviations │
│  to                                                                │
│  military specifications and standards shall be reviewed and       │
│  recorded.  Also, record any part of the FCA which fails to meet   │
│  specifications or standards but is not an approved deviation.     │
│                                                                     │
│   B.  Results of Team Review.  List the deviations against the     │
│  equipment/computer software being FCA'd that were reviewed.       │
│                                                                     │
└─────────────────────────────────────────────────────────────────────┘
```

Figure 5.6.3-1d. Sample FCA Certification Package (Continued)

FCA DEFICIENCY SUMMARY LIST

CONFIGURATION ITEM NOMENCLATURE _____

CI IDENTIFIER	REPORT REFERENCE	DESCRIPTION	RESPONSIBILITY FOR CORRECTION	PLACE OF INSPECTION	INSPECTED BY

Figure 5.6.3-1e. Sample FCA Certification Package (Continued)

42

SPECIFICATION/TESTING REVIEW

Configuration Item Nomenclature _____

Specification No. _____

Test Procedures _____

Spec Ref TP Ref	Description	Test Result

Figure 5.6.3-1f. Sample FCA Certification Package (Continued)

```
┌────────────────────────────────────────────────────────────────────┐
│                                                                  .   │
│                   SPECIFICATION/TESTING REVIEW                        │
│                                                                      │
│  Configuration Item Nomenclature _____ │
│                                                                      │
│  Specification No. _____ │
│                                                                      │
│  Test Procedures_____ │
│                                                                      │
│   ┌──────────────┬──────────────────────┬─────────────────────┐     │
│   │ _ _ Spec_Ref _ _│                      │                     │     │
│   │    TP Ref    │      Description      │     Test Result     │     │
│   ├──────────────┼──────────────────────┼─────────────────────┤     │
│   │ _ _ _ _ _ _  │                      │                     │     │
│   ├──────────────┼──────────────────────┼─────────────────────┤     │
│   │ _ _ _ _ _ _  │                      │                     │     │
│   ├──────────────┼──────────────────────┼─────────────────────┤     │
│   │ _ _ _ _ _ _  │                      │                     │     │
│   ├──────────────┼──────────────────────┼─────────────────────┤     │
│   │ _ _ _ _ _ _  │                      │                     │     │
│   ├──────────────┼──────────────────────┼─────────────────────┤     │
│   │ _ _ _ _ _ _  │                      │                     │     │
│   ├──────────────┼──────────────────────┼─────────────────────┤     │
│   │ _ _ _ _ _ _  │                      │                     │     │
│   ├──────────────┼──────────────────────┼─────────────────────┤     │
│   │ _ _ _ _ _ _  │                      │                     │     │
│   ├──────────────┼──────────────────────┼─────────────────────┤     │
│   │ _ _ _ _ _ _  │                      │                     │     │
│   ├──────────────┼──────────────────────┼─────────────────────┤     │
│   │ _ _ _ _ _ _  │                      │                     │     │
│   ├──────────────┼──────────────────────┼─────────────────────┤     │
│   │ _ _ _ _ _ _  │                      │                     │     │
│   ├──────────────┼──────────────────────┼─────────────────────┤     │
│   │ _ _ _ _ _ _  │                      │                     │     │
│   ├──────────────┼──────────────────────┼─────────────────────┤     │
│   │ _ _ _ _ _ _  │                      │                     │     │
│   ├──────────────┼──────────────────────┼─────────────────────┤     │
│   │ _ _ _ _ _ _  │                      │                     │     │
│   ├──────────────┼──────────────────────┼─────────────────────┤     │
│   │ _ _ _ _ _ _  │                      │                     │     │
│   └──────────────┴──────────────────────┴─────────────────────┘     │
└────────────────────────────────────────────────────────────────────┘
```

Figure 5.6.3-1f. Sample FCA Certification Package (Continued)

DEVIATIONS

CONFIGURATION ITEM NOMENCLATURE: _____

REFERENCE (Spec, STD, Etc.)	CCB OR MRB APPROVAL/DIRECTIVE	REQUIREMENT WAIVED	REMARKS

Figure 5.6.3-1g Sample FCA Certification Package (Continued)

45

5.6.3.1 Contract requirements.

The schedule dates, and actual accomplishment dates, for the PCAs shall be recorded in the CSA system. All internally, and Government, approved engineering changes shall be incorporated into new revisions of the applicable configuration documentation prior to the PCA. In addition, the contractor shall make the final draft copy of the product specification available to the Government for review prior to the PCA, as specified in the contract.

5.6.3.2 Contractor responsibility.

Prior to the audit date, the contractor shall provide the following information to the Government:
- Contractor representation.
- Identification of items to be audited by:
  (1) Nomenclature.
  (2) Specification Identification Number.
  (3) CI Identifiers.
  (4) Serial Numbers.
  (5) Drawing and Part Numbers.
  (6) CAGE Codes.
- A list delineating all deviations against the CI either requested or Government approved.
- Reference information to the CI being audited as follows:
  (1) CI product specification.
  (2) A list delineating both approved and outstanding changes against the CI.
  (3) Complete shortage list.
  (4) Acceptance test procedures and associated test data.
  (5) Engineering drawing index including revision letters.
  (6) Operating and support manuals; including operators manuals, maintenance manuals, illustrated parts breakdown, programmer's manuals, diagnostic manuals, etc.
  (7) Proposed DD Form 250, "Material Inspection and Receiving Report."
  (8) Approved nomenclature and nameplates.
  (9) VDDS, for software.
  (10) FCA minutes for each CI.
  (11) Findings/Status of Quality Assurance Programs.
  (12) Program parts selection list.
  (13) Interface Design Document for software.
- Assemble and make available to the PCA team at time of audit all data describing the item configuration, to include:
  (1) Current approved issue of hardware development and software and interface requirements specifications to include approved SCNs and approved deviations.
  (2) Identification of all changes actually made during test.
  (3) Identification of all required changes not completed.
  (4) All configuration documentation, or electronic representations of the same, required to identify the CI.
  (5) Manufacturing instructions, manufacturing instruction sheets or computer-aided manufacturing (CAM) data related to drawings and computer-aided design (CAD) presentations of specified parts identified by the Government.
- Identify any difference between the physical configurations of the selected production unit and the development unit(s) used for the FCA and shall certify or demonstrate to the Government that these differences do not degrade the functional characteristics of the selected units.
- A sample PCA Checklist is shown in Figure 5.6.3.3-1.

5.6.3.3 PCA procedures and requirements.

The following actions shall be performed as part of each PCA:

- A representative number of drawings (and/or CAD presentations) and associated manufacturing instruction sheets (and/or CAM data) for each item of hardware, identified by the Government co-chairperson, shall be reviewed to determine their accuracy and insure that they include the authorized changes reflected in the engineering drawings (and/or CAD presentations) and the hardware. Unless otherwise directed by the Government co-chairperson, inspection of drawings (and/or CAD presentations) and associated manufacturing instructions (and/or CAM data) may be accomplished on a valid sampling basis. The purpose of this review is to insure that the manufacturing instructions (and/or CAM data) accurately reflect all design details contained in the drawings (and/or CAD presentations) . Since the hardware is built in accordance with the manufacturing instructions (and/or CAM data), any discrepancies between the manufacturing instructions (and/or CAM data) and the design details and changes in the drawings (and/or CAD presentations) will he reflected in the hardware. The following hardware/computer software documentation shall be available, and the following tasks shall be accomplished at the PCA.

PCA CHECKLIST

The following hardware, computer software, documentation shall be available, and the following tasks shall be accomplished at the PCA.

Hardware:

Computer Software:

Documentation:

	YES	NO
(1) Approved final draft of the configuration item product specification.	___	___
(2) A list delineating both approved and outstanding changes against the configuration item.	___	___
(3) Complete shortage list.	___	___
(4) Acceptance test procedures and associated test data.	___	___
(5) Engineering Drawing Index.	___	___
(6) Operating, maintenance, and illustrated parts breakdown manuals.	___	___
(7) List of approved material review board actions on deviations.	___	___
(8) Proposed DD Form 250, "Material Inspection and Receiving Report."	___	___
(9) Approved nomenclature and nameplates.	___	___
(10) Manuscript copy of all software CI manuals.	___	___
(11) Computer Software Version Description Document.	___	___
(12) Current set of listings and updated design descriptions or other means of design portrayal for each software CI.	___	___
(13) FCA minutes for each configuration item.	___	___
(14) Program Parts Selection List (PPSL) (see MIL-STD-965).	___	___

Tasks:

	YES	NO
(1) Define Product Baseline.	___	___
(2) Specification Review and Validation.	___	___
(3) Drawing Review.	___	___
(4) Review acceptance test procedures and results.	___	___
(5) Review shortages and unincorporated design changes.	___	___
(6) Review deviations.	___	___
(7) Examine proposed DD 250.	___	___
(8) Review contractor's Engineering Release and Change Control System.	___	___
(9) Review system allocation document.	___	___
(10) Review Software User's Manuals, Software Programmer's Manuals, Computer System Operator's Manual, and Firmware Support Manual.	___	___
(11) Review software CIs for the following:		
(a) Preliminary and detail Software Component design descriptions.		
(b) Preliminary and detail Software interface requirements.		
(c) Data base characteristics, storage allocation charts and timing and sequencing characteristics.	___	___
(12) Review packaging plan and requirements.	___	___
(13) Review status of Rights in Data.	___	___
(14) Ensure that all appropriate items installed in the deliverable hardware, that should have been processed through the PCP, are identified on the PPSL or that the necessary approval documentation is available and that the hardware does not contain items that should have been processed through the PCP but were not (see MIL-STD-965).	___	___

Figure 5.6.3.3-1. Sample PCA Checklist

- The following minimum information shall be recorded in the minutes for each drawing (and/or CAD presentation) reviewed:
  (1) Drawing number/title (include revision letter).
  (2) List of manufacturing instructions and/or CAM data (numbers with change letter/titles) associated with this drawing.
  (3) Discrepancies/comments.
  (4) A sample of part numbers reflected on the drawing. Check to insure compatibility with the Program Parts Selection List, and examine the CI to insure that the proper parts are actually installed.
- As a minimum, the following inspections shall be accomplished for selected drawings (and/or CAD presentations) and associated manufacturing instructions (and/or CAM data):
  (1) Drawing number identified on manufacturing instructions (and/or CAM data) shall match the latest released drawing (and/or CAD presentation).
  (2)List of materials on manufacturing instructions (and/or CAM data) shall match materials identified on the drawing (and/or CAD presentations).
  (3) Nomenclature descriptions, part numbers and serial number markings called out on the drawing (and/or CAD presentation) shall be identified on the manufacturing instructions (and/or CAM data).
  (4) Drawings (and/or CAD presentations) and associated manufacturing instructions (and/or CAM data) shall be reviewed to ascertain that all approved changes have been incorporated into the CI.
  (5) Release records shall be checked to insure all drawings (and/or CAD presentations) reviewed are identified.
  (6) The number of any drawings (and/or CAD presentations) containing more than five outstanding changes attached to the drawing shall be recorded.
  (7) The drawings (and/or cm presentations) of a major assembly/black box of the HWCI shall be checked for continuity from top drawing down to piece-part drawing.
  (8) Insure that approvals by the Government are present where required.
- The Program Parts Selection List (PPSL) shall be compared to the HWCI/engineering drawing package to ensure only approved parts are listed. (See 6.6)
- Review of all records of baseline configuration for the by direct comparison with the contractor's engineering release system and change control procedures to verify that the configuration being produced accurately reflects released engineering data. This includes interim releases of spares/repair parts provisioned prior to PCA to ensure delivery of currently configured spares/repair parts.
- Audit the software library, or similar internal support activity, to assure that it accurately identifies, controls, and tracks changes to the software and documentation. Audit the contractor's engineering release and change control system against the requirements Appendix B to ascertain that the system is adequate properly control the processing and formal release engineering changes. The contractor's system shall meet the information and capabilities requirements of Appendix B as a minimum. The contractor's formats, systems, and procedures will be used.
- CI acceptance test data and procedures shall comply with product specifications. The PCA team shall determine any acceptance tests to be re-accomplished, and reserves the right to have representatives of the Government witness all or any portion of the required audits, inspections, tests.
- CIs which fail to pass acceptance testing shall be repaired if necessary and shall be retested by the contractor either in the manner specified by the PCA team leader or accordance with procedures in the product specification.
- Present data confirming the inspection and test of subcontractor equipment end items at point of manufacture. Inspection and tests shall have been witnessed by a Government representative.
- The PCA team shall review the prepared back-up data (all initial documentation which accompanies the CI) for correct types and quantities to ensure adequate coverage at the time of shipment to the user.
- CIS which have demonstrated compliance with the product specification will be approved for acceptance. The PCA team shall certify by signature that the CI has been built in accordance with the drawings and specifications.
- As a minimum, the following actions shall be performed by the PCA team on each CSCI being audited:
  (1) Review all documents which will comprise the product specification for format and completeness.
  (2) Review FCA minutes for recorded discrepancies and actions taken.
  (3) Review the design descriptions for proper entries, symbols, labels, tags, references, and data descriptions.

(4) Compare detailed design descriptions with the software listings for accuracy and completeness.

(5) Examine actual CSCI delivery media (disks, tapes, etc.) to ensure conformance with Section 5 of the software requirements specifications.

(6) Review the annotated listings for compliance with approved coding standards.

(7) Review all required operation and support documents for completeness, correctness, incorporation of comments made at Test Readiness Review (TRR), and adequacy to operate and support the CSCI(s). Formal verification or acceptance of these manuals should be withheld until system testing to ensure that the procedural contents are correct.

(8) Examine the related documentation to ensure that the relationship of the CSCI to the parts, components or assemblies that store the executable forms of the CSCI is properly described. For firmware, ensure that the information completely describes the requirements for installation of the CSCI into the programmable parts or assemblies and that this information describes the requirements for verification that the installation has been properly implemented. Where follow-on acquisition of the firmware items Is intended, ensure that the documentation has been accomplished to the level of detail necessary for the intended reprocurement.

(9) Demonstrate, using deliverable or Government owned support software, that each CSCI can be regenerated. The regenerated CSCI shall be compared to the actual CSCI delivery media to insure they are identical.

5.6.3.4 Post-audit action.

- The contractor will be notified in writing by the Government of acceptance or rejection of the PCA, of PCA status and discrepancies to be corrected, or rejection of the PCA and requirements for re-accomplishment.
- After completion of the PCA, the contractor shall publish and distribute copies of PCA minutes as specified in the contract. The results of the PPSL review will be included in the final PCA minutes.
- Accomplish residual tasks for which they were identified as the responsible activity.

5.6.3.5 PCA Certification

A sample PCA certification package is shown in Figures 5.6.3.5-1 through 5.6.3.5-11. When specified in the contract DD Form 1423, a Configuration Audit Summary Report, consisting of the applicable information of the certification package shall be required.

```
┌─────────────────────────────────────────────────────────────┐
│                                                               │
│              PCA CERTIFICATION PACKAGE                        │
│              ──────────────────────────                       │
│                                                               │
│                                                               │
│   CI IDENTIFIER: _____     │
│                                                               │
│   CONTRACT NO.  _____      │
│                                                               │
│                                                               │
│   PRIME CONTRACTOR:            EQUIPMENT MANUFACTURERS:        │
│                                                               │
│                                                               │
│   _____         _____           │
│                                                               │
│   _____         _____           │
│                                                               │
│   _____         _____           │
│                                                               │
│                                                               │
│                    (Designee)                  (Designee)     │
│   APPROVED BY_____      APPROVED BY _____     │
│              (CONTRACTOR)                   (GOVERNMENT)       │
│                                                               │
│                                                               │
│   DATE    _____      DATE  _____       │
│                                                               │
│                                                               │
│                                                               │
│                                                               │
│                                                               │
│                                                               │
│                                                               │
│                                                               │
│                                                               │
└─────────────────────────────────────────────────────────────┘
```

Figure 5.6.3.5-1 Sample PCA Certification Package

```
                         SCOPE/PURPOSE

  Scope:  A Physical Configuration Audit (PCA) was conducted on the
  following end items of equipment/computer software:




  CI IDENTIFIER    CI NOMENCLATURE     PART NUMBER     SERIAL NO.     NSN




Purpose.   The purpose of the PCA was to ensure accuracy of the identifying
documentation and to establish a product baseline.

The establishment of a product baseline for equipment/computer software is
not to be construed as meeting Government requirements for delivery of an
operational system meeting approved acceptance criteria.


                       Definition of Terms

COMMENT - A note explaining, illustrating, or criticizing the meaning of a
writing. Items of this nature should be explored by the conrtractor and/or
the Government, but corrective action is NOT necessary to successfully
accomplish the PCA.

DISCREPANCY - A note explaining, illustrating, or criticizing the difference
between writings.  A note showing the variance between what exists and what
is acceptable.  Items of this nature shall be rectified by the contractor
prior to successful accomplishment of a PCA.
```

Figure 5.6.3.5-2 Sample PCA Certification Package (Continued)

```
┌─────────────────────────────────────────────────────────────┐
│                PCA CERTIFICATION SHEET NO.1                   │
│                (For Equipment/Computer Software)              │
│                                                               │
│                                                               │
│   Contract: _____    Date: _____   │
│                                                               │
│   Contractor: _____                       │
│                                                               │
│               _____                       │
│                                                               │
│               _____                       │
│                                                               │
│                                                               │
│   Product Baseline.  The following documents of the issue     │
│   and date shown comprise the product baseline for the        │
│   listed equipment(s)/computer software:                      │
│                                                               │
│                                                               │
│                 ASSEMBLY TOP              EQUIPMENT/COMPUTER   │
│                 DRAWING NO.    ISSUE      SOFTWARE NOMENCLATURE│
│   SPEC NO.                                                     │
│                                                               │
│                                                               │
│                                                               │
│                                                               │
│                                                               │
│                                                               │
│   Signature(s) of PCA Team Member(s)                          │
│   **                                                          │
│   _____    _____  │
│   *                                                           │
│   _____    _____  │
│                                                               │
│   _____    _____  │
│                                                               │
│   _____    _____  │
│                                                               │
│   _____    _____  │
│                                                               │
│   _____    _____  │
│                                                               │
│   ** Team Chairperson                                         │
│    * Sub-Team Chairperson                                     │
└─────────────────────────────────────────────────────────────┘
```

Figure 5.6.3.5-3 Sample PCA Certification Package (Continued)

```
  ┌─────────────────────────────────────────────────────────────────────┐
  │              PCA CERTIFICATION SHEET NO. 2                           │
  │             (For Equipment/Computer Software)                        │
  │                                              Date:                   │
  │    Contract: _____ _____        │
  │    Contractor: _____                         │
  │                                                                     │
  │               _____                         │
  │                                                                     │
  │  Specification Review and Validation.  Specifications have been     │
  │  reviewed and validated to assure that they adequately define the   │
  │  configuration item and the necessary testing, mobility/            │
  │  transportability and packaging requirements.                       │
  │  Check One                                                          │
  │    ┌──┐  The Product Specifications are complete and adequately     │
  │    │  │  define the configuration item.  They shall, therefore,     │
  │    └──┘  constitute the product baseline.  See attachment ___       │
  │          for comments.                                              │
  │                                                                     │
  │    ┌──┐  The Product Specifications are unacceptable.  See          │
  │    │  │  attachment ___ for a list of discrepancies.                │
  │    └──┘                                                             │
  │                                                                     │
  │  Signature(s) of PCA Team Member(s)                                 │
  │  **                                                                 │
  │      _____        _____     │
  │   •  _____        _____     │
  │                                                                     │
  │      _____        _____     │
  │                                                                     │
  │      _____        _____     │
  │                                                                     │
  │   ** Team Chairperson                   * Sub-Team Chairperson       │
  │                                                                     │
  │  A.  Specification Review and Validation Instructions.  The         │
  │  detailed specifications listed in paragraph B. below shall be      │
  │  reviewed for compliance with the applicable requirements.  Each    │
  │  specification shall serve as the basic document for configuration  │
  │  control of the subject configuration items.  The information       │
  │  contained within the specifications shall be audited at the PCA.   │
  │                                                                     │
  │  B.  Review and Validation Results.                                 │
  │                                                                     │
  │      1.  Specifications reviewed and validated:                     │
  │                                                    EQUIPMENT/COMPUTER│
  │      SPEC NO.    PART NO.    DATE                   SOFTWARE         │
  │                                                    NOMENCLATURE      │
  │                                                                     │
  │                                                                     │
  │                                                                     │
  │      2.  Specifications Reviewed and Disapproved:                   │
  │          (Provide attachment for causes.)                           │
  │                                                    EQUIPMENT/COMPUTER│
  │      SPEC NO.    PART NO.    DATE                   SOFTWARE         │
  │                                                    NOMENCLATURE      │
  │                                                                     │
  └─────────────────────────────────────────────────────────────────────┘
```

Figure 5.6.3.5-4 Sample PCA Certification Package (Continued)

```
PCA CERTIFICATION SHEET NO. 3

                     (Equipment)


Contract: _____    Date:_____

Contractor:_____

           _____



Drawing Review.  Drawings have been compared with the equipment to ensure
that the latest drawing change letter has been incorporated into the
equipment, that part numbers agree with the drawings, and that the drawings
are complete and accurately describe the equipment.
Check One
┌──┐    The drawings are complete and accurately describe the equipment.  See
│  │    attachment ___ for comments.
└──┘

┌──┐    The drawings are compatible with the applicable contract
│  │    Program Parts  Selection List (PPSL).
└──┘

┌──┐    Attachment ___ is a list of discrepancies.
│  │
└──┘

  Signature(s) of PCA Team Member(s)
 *
   _____    _____

   _____    _____

   _____    _____

   _____    _____

   _____    _____

 * Sub-Team Chairperson

A.  Drawing Review Results.  The following drawings were reviewed by
the PCA drawing review sub-teams:

         DOCUMENT NUMBER                    DOCUMENT TITLE
```

Figure 5.6.3.5-5 Sample PCA Certification Package (Continued)

```
┌─────────────────────────────────────────────────────────────────┐
│                PCA CERTIFICATION SHEET NO. 4                      │
│                        (Equipment)                                │
│                                                                   │
│ Contract: _____      Date: _____       │
│ Contractor: _____                               │
│            _____                                │
│                                                                   │
│ Acceptance Test Procedures and Results.  The acceptance test      │
│ procedures have been reviewed for adequacy and the acceptance     │
│ test results have been reviewed to ensure that the testing has    │
│ been properly done and certified.                                 │
│                                                                   │
│ Attachment ___ is a list of the documents reviewed.               │
│ Check One                                                         │
│    ┌──┐  Procedures and results reviewed satisfy  the            │
│    │  │  requirements and are accepted.  See attachment ___       │
│    └──┘  for comments.                                            │
│                                                                   │
│    ┌──┐  Attachment ___ is a list of                             │
│    │  │  discrepancies.                                           │
│    └──┘                                                           │
│                                                                   │
│ Signature(s) of PCA Team Member(s)                                │
│ *                                                                 │
│ _____        _____│
│                                                                   │
│ _____        _____│
│                                                                   │
│ _____        _____│
│                                                                   │
│ _____        _____│
│                                                                   │
│  * Sub-Team Chairperson                                           │
│                                                                   │
│ A.  Acceptance Test Procedures.  The following acceptance test    │
│ procedures were reviewed by the ATP Sub-Team:                     │
│                                                                   │
│     DOCUMENT                                                      │
│      NUMBER     DATE/REV LTR     DOCUMENT TITLE        STATUS      │
│                                                                   │
│                                                                   │
│                                                                   │
│ B.  Acceptance Test Results.  The following acceptance test       │
│ results documentation were reviewed by the ATR Sub-Team:          │
│                                                                   │
│     DOCUMENT                                                      │
│      NUMBER     DATE/REV LTR     DOCUMENT TITLE        STATUS      │
│                                                                   │
│                                                                   │
└─────────────────────────────────────────────────────────────────┘
```

Figure 5.6.3.5-6 Sample PCA Certification Package (Continued)

PCA CERTIFICATION SHEET NO. 5
(For Equipment/Computer Software)

Contract: _____ Date: _____

Contractor: _____

_____

Review of Shortages and Unincorporated Design Changes. The shortages and
unincorporated design changes listed on the proposed DD Form 250 "Material
Inspection and Receiving Report," and other records have been reviewed.

Check One

☐ There are no shortages or unincorporated design changes.

☐ Attachment ___ is a list of shortages and/or unincorporated design
    changes, and the recommended corrective action required.

Signature(s) of PCA Team Member(s)

*_____   _____

_____   _____

_____   _____

_____   _____

* Sub-Team Chairperson

A. Review of Shortages and Unincorporated Design Changes. All shortages and
   unincorporated design changes listed on the proposed DD Form 250, "Material
   Inspection and Receiving Report," shall be reviewed by the Government or
   their designated representatives for a determination of what changes should
   be accomplished in the field and what changes should be accomplished at the
   contractor's facility. The Government shall also determine if the reported
   shortages and unincorporated changes are complete.

B. Results. List the shortages and unincorporated design changes that were
   reviewed in compliance with requirements, including the agreed-to corrective
   action.

Figure 5.6.3.5-7 Sample PCA Certification Package (Continued)

PCA CERTIFICATION SHEET NO. 6
(For Equipment/Computer Software)

Contract: _____ Date: _____

Contractor: _____

<u>Review Deviations.</u>   A review of all deviations to military specifications
and standards that have been approved. The purpose is to determine the
extent to which the equipment(s)/computer software undergoing PCA vary
from applicable specifications and standards and to form a basis for
satisfactory compliance with these specifications and standards.

Check One

☐   The equipment(s)/computer software listed on Certification Sheet
    No. 1 of this report complies with all applicable specifications
    and standards. See attachment ___ for comments.

☐   Attachment ___ is a list of discrepancies and/or
    comments.

In accordance with this paragraph, all applicable deviations
have been reviewed with the following results:

Signature(s) of PCA Team Member(s)

* _____   _____

  _____   _____

  _____   _____

  _____   _____

  _____   _____

  _____   _____

 * Sub-Team Chairperson

<u>Deviation Review Team Instructions.</u> All approved deviations to
military specifications and standards shall be reviewed and recorded.
Also, record any part of the PCA which fails to meet specifications or
standards but is not an approved deviation.

<u>Results of Team Review.</u> List the deviations against the equipment/
computer software being PCA'd that were reviewed

Figure 5.6.3.5-8 Sample PCA Certification Package (Continued)

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```
                    PCA CERTIFICATION SHEET NO. 7
                    (For Equipment/Computer Software)


Contract: _____ Date: _____
Contractor: _____
            _____

Examination of the Proposed DD Form 250.  The DD Form 250 has been
examined to ensure that it adequately defines the equipment/computer
software and that unaccomplished tasks are included as deficiencies.

Check One

    [  ]  The DD Form 250 adequately defines the equipment/computer
          software and all unaccomplished tasks are included as
          deficiencies.

    [  ]  Attachment ___ is a list of discrepancies and/or comments.

Signature(s) of PCA Team Member(s)

 *_____        _____

  _____        _____

  _____        _____

  _____        _____

  _____        _____


  * Sub-Team Chairperson


A. Examination of Proposed DD Form 250. The proposed DD Form 250 shall
   be examined for completeness and an accurate definition of the
   equipment/computer software.  Unaccomplished tasks, shortages, and
   certain specified discrepancies uncovered at the PCA shall be
   included in the DD Form 250.  If the equipment/computer software is
   to be shipped from the plant, the Program Office representative will
   recommend to the Contract Administrative Office that the DD Form 250
   be executed in accordance with the terms of the contract.


B. Results.  Include a statement that the proposed DD Form 250 was
   examined and recommended.
```

Figure 5.6.3.5-9 Sample PCA Certification Package (Continued)

```
+--------------------------------------------------------------------+
|                                                                    |
|                 PCA CERTIFICATION SHEET NO.  8                     |
|                 (For Equipment/Computer Software)                  |
|                                                                    |
|                                                                    |
| Contract: _____     Date: _____ |
| Contractor:     _____                 |
|                                                                    |
|                 _____                 |
|                                                                    |
|                 _____                 |
|                                                                    |
|                                                                    |
| Review of Contractors' Engineering Release and Change Control      |
| System.  The contractor's engineering release system and change    |
| control procedures have been reviewed to ensure that they are      |
| adequate to properly control the processing and formal release of  |
| engineering changes.                                               |
|                                                                    |
|                                                                    |
| Check One                                                          |
|                                                                    |
|     +---+   The contractor's engineering release system and change |
|     |   |   control procedures are adequate for the processing and |
|     +---+   formal release of engineering changes. See attachment  |
|             ___ for comments.                                      |
|                                                                    |
|     +---+   Attachment ___ is a list of deficiencies.              |
|     |   |                                                          |
|     +---+                                                          |
|                                                                    |
| Signature(s) of PCA Team Member(s)                                 |
|                                                                    |
| * _____     _____        |
|                                                                    |
|   _____     _____        |
|                                                                    |
|   _____     _____        |
|                                                                    |
|   _____     _____        |
|                                                                    |
|   _____     _____        |
|                                                                    |
|   _____     _____        |
|                                                                    |
| * Sub-Team Chairperson                                             |
|                                                                    |
+--------------------------------------------------------------------+
```

Figure 5.6.3.5-10 Sample PCA Certification Package (Continued)

```
+--------------------------------------------------------------------+
|                  PCA CERTIFICATION SHEET NO. 9                     |
|                          (Equipment)                               |
|                                                                    |
|  Contract:    _____    Date: _____   |
|  Contractor:  _____                      |
|               _____                      |
|               _____                      |
|                                                                    |
|  1. Review of Logistics Support Plan for Pre-operational Support.  |
|  The                                                               |
|  Logistics Support Plan for Pre-operational Support has been       |
|  reviewed to                                                       |
|  ensure that it is adequate to support the acquisition phase and   |
|  is compatible                                                     |
|  with the operational phase maintenance concept and support        |
|  requirements.                                                     |
|                                                                    |
|    Check One                                                       |
|         [  ]  The contractor's Logistic Plan for pre-operational   |
|               support will                                         |
|               fulfill the acquisition phase requirements and is    |
|               compatible with                                      |
|               operational phase needs.                             |
|                                                                    |
|         [  ]  Attachment ___ is a list of deficiencies.            |
|                                                                    |
|  2. Review of Long Lead Time Items and Provisioned Items Processed |
|  Prior to                                                          |
|  PCA. Long Lead Time items released, and items provisioned, prior  |
|  to PCA                                                            |
|  have been reviewed to ensure that obsolete items resulting from   |
|  pre-PCA                                                           |
|  design changes are purged from the system. Where basic items may  |
|  be                                                                |
|  upgraded by rework or modification these actions have been        |
|  verified as                                                       |
|  accomplished or in process based upon design change notice.       |
|                                                                    |
|    Check One                                                       |
|         [  ]  Long lead time items and provisioned items           |
|               processed, prior to                                  |
|               PCA, are all of current configuration at time of PCA |
|               or are in                                            |
|               work.                                                |
|                                                                    |
|         [  ]  Attachment ___ is a list of deficiencies.            |
|                                                                    |
|  Signature(s) of PCA Team Member(s)                                |
|  *_____       _____           |
|   _____       _____           |
|   _____       _____           |
|   _____       _____           |
|   _____       _____           |
|   _____       _____           |
|                                                                    |
|  * Sub-Team Chairperson                                            |
+--------------------------------------------------------------------+
```

Figure 5.6.3.5-11 Sample PCA Certification Package (Continued)

6.0 NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory).

6.1 Intended use.

6.2 Tailoring guidance for contractual application.

The requirements of this standard must be tailored for application to programs involving items of various levels of complexity in various phases of their life cycle. Table II is provided to help you decide which requirements from sections 4 and 5 should be invoked in your contract. Table III is provided to help you decide which status accounting tasks, from Appendix H, should be invoked in your contract. These tables list numbered paragraphs and subparagraphs only. Lettered subparagraphs are considered an integral part of the numbered paragraph or subparagraph to which they are attached, and they are invoked with the numbered paragraph or subparagraph automatically, unless specifically stated otherwise in the tasking statement in the Statement of Work. Where the subparagraphs listed in the tables are normally invoked as a unit by citing the lead paragraph, the subparagraphs are listed, but no tailoring guidance is provided for the individual subparagraphs; when certain subparagraphs will need to be tailored out, or when they may be separately tailored into, the contract, separate tailoring guidance is provided for those specific subparagraphs.

6.2.1 Use of Table I.

The columns are arranged to identify the normal application in the Demonstration and Validation (D/V), the Engineering and Manufacturing Development (EMD), the production and Deployment (PRD), and the Operation and Support (OPS) phases of the life cycle. The SMPL (sample wording) column provides a recommendation on which of the sample tasking wording to use (by reference to samples A, B, or C in 6.2.1.2) and, if applicable, to the blank spaces (e.g., [I]or [2] in the sample. The NOTE column contains a "pointer" to a specific Note (see 6.2.1.3) that will provide further guidance in tailoring the requirement.

6.2.1.1 Explanation of codes .

A number of codes are used in Table I paragraphs that would not normally be invoked to indicate the applicability of a specific requirement to a specific phase of the program. The following codes are used:

- N/A - This code is used to designate "title-only" paragraphs that would not normally be invoked to incorporate all subparagraphs into the contract.
- ALL - This code indicates that the requirement is almost always invoked for this phase, with the understanding that there may be a few exceptions.
- NO - This code indicates that the requirement is almost never invoked for this phase, with the understanding that there may be a few exceptions.
- MOST - This code indicates that most programs would invoke this requirement in their contract for this phase.
- OPT - This code indicates that this is an optional requirement for this phase. Based on the notes provided, you will have to determine whether to invoke it in your contract.
- FEW - This code indicates that this is an optional requirement for this phase but that only a few programs may want to utilize it. (Usually this relates to a requirement that is normally invoked in a later phase of the program.)
- SLCT - This code indicates that this requirement is one of a group of "either/or" requirements that must be selected if the lead paragraph is invoked for that phase; normally, only one of the group should be selected.

Table 6.2.1.1-1a Tailoring guide for use with this TOR

PARA #	PARAGRAPH TITLE	D/V	EMD	PRD	OPS	NOTE	SMPL
4	GENERAL REQUIREMENTS	ALL	ALL	ALL	ALL	a	B(1)
4.1	Basic Requirements	ALL	ALL	ALL	ALL		
4.2	Planning	ALL	ALL	ALL	ALL		
4.3	Computer-aided acq and logistics support (CALS)	ALL	ALL	ALL	ALL		
4.3.1	Data distribution/access	ALL	ALL	ALL	ALL		
4.3.2	Electronic transfer of data	MOST	MOST	MOST	MOST	b	B(3)
4.3.3	Interactive access to digital data	OPT	OPT	OPT	OPT	b	B(3)
4.4	Config identification	ALL	ALL	ALL	ALL		
4.5	Configuration control	ALL	ALL	ALL	ALL		
4.6	Configuration status acctg	ALL	ALL	ALL	ALL		
4.7	Configuration audits	ALL	ALL	OPT	OPT	c	B(3)
5	DETAILED REQUIREMENTS	N/A	N/A	N/A	N/A		
5.1	Purpose	N/A	N/A	N/A	N/A		
5.2	Config mgt administration	N/A	N/A	N/A		d	
5.2.1	Contractor's CM Plan (Invokes APPENDIX A)	MOST	MOST	OPT			C(1) C(2)
5.2.2	Work breakdown structure	MOST	MOST	MOST			C(1)
5.2.3	Technical reviews	ALL	ALL	NO			C(1)
5.3	Config identification	N/A	N/A	N/A	N/A		
5.3.1	Purpose of config identif	ALL	ALL	ALL			C(1)
5.3.2	Configuration item selection	ALL	ALL	OPT			C(1)
5.3.3	Developmental configuration	ALL	ALL	OPT	OPT	e	B(1)
5.3.3.1	Documentation library	ALL	ALL	OPT	OPT		
5.3.3.2	Drawing library	MOST	MOST	OPT	OPT	f	B(3)
5.3.3.3	Software Devel Library (SDL)	MOST	MOST	OPT	OPT	f	B(3)
5.3.4	Configuration Baselines	ALL	ALL	OPT	OPT		C(1)
5.3.4.1	Configuration Baseline/config documentation	ALL	ALL	ALL			B(1)
5.3.4.1.1	Funct Config Documentation	ALL	ALL	OPT		g	B(3)
5.3.4.1.2	Alloc Config Documentation	FEW	ALL	OPT		h	B(3)
5.3.4.1.3	Product Config Documentation	NO	OPT	ALL		i	B(3)
5.3.4.2	Maint of config documentation	MOST	MOST	MOST	OPT	j	B(3)
5.3.5	Egrg release and correlation of Manufactured products (Invokes APPENDIX B)	FEW	ALL	ALL	ALL		C(1) C(2)
5.3.5.1	Specification release/appvl	ALL	ALL	ALL			C(1)
5.3.5.2	Reqts for Engrg Rel Records	FEW	OPT	OPT	OPT	k	A(1)
5.3.5.2.1	Use of Engrg Rel Records (Invokes APPENDIX C)	FEW	OPT	OPT	OPT		A(2)
5.3.5.2.2	Establish config baselines	FEW	OPT	OPT	OPT		
5.3.5.2.3	Changes	FEW	OPT	OPT	OPT		
5.3.5.2.4	Consolidation of multiple chgs into a single ERR	FEW	OPT	OPT	OPT		

Table 6.2.1.1-1b Tailoring guide for use with this TOR (continued)

PARA #	PARAGRAPH TITLE	D/V	EMD	PRD	OPS	NOTE	SMPL
5.3.6	Configuration identifiers	ALL	ALL	ALL		1	B(1)
5.3.6.1	CAGE code	ALL	ALL	ALL			
5.3.6.2	Govt type desig/nomenclature	ALL	ALL	ALL			
5.3.6.3	Document numbers	ALL	ALL	ALL			
5.3.6.4	Part/item identif numbers	MOST	MOST	MOST		f	B(3)
5.3.6.5	Software identifiers	MOST	MOST	MOST		f	B(3)
5.3.6.6	Serial/lot numbers	FEW	ALL	ALL	ALL	m	
5.3.6.6.1	Government serial numbers	FEW	OPT	OPT	OPT	n	B(3)
5.3.6.6.2	Reuse of serial numbers	FEW	ALL	ALL	ALL	m	
5.3.6.7	Product identif/marking	FEW	MOST	MOST		o,f	B(3)
5.3.6.7.1	Software marking/labeling	NO	MOST	MOST		f	B(3)
5.3.6.7.2	Firmware labeling	NO	MOST	MOST		f	B(3)
5.3.6.7.3	NDI,COSTS, and PDI labeling	NO	OPT	OPT	OPT	1	B(3)
5.3.7	Interface management	N/A	N/A	N/A			
5.3.7.1	Interface requirements	ALL	ALL	OPT		p	C(1)
5.3.7.2	Rqts for an ICWG	FEW	OPT	OPT		q	B(1)
5.3.7.2.1	ICWG membership	FEW	OPT	OPT		q	
5.3.7.2.2	ICWG chairmanship	SLCT	SLCT	SLCT		q	B(3)
5.4	Configuration control	N/A	N/A	N/A	N/A		
5.4.1	Purpose of config control	ALL	ALL	ALL	ALL		C(1)
5.4.2	Reqts for Engineering Changes	ALL	ALL	ALL	ALL	z	
5.4.2.1	The engrg change process	ALL	ALL	ALL	ALL		C(1)
5.4.2.2	Administrative requirements	ALL	ALL	ALL	ALL		B(1)
5.4.2.2.1	Classification of engrg chgs	ALL	ALL	ALL	ALL		
5.4.2.2.2	Classifying engrg chg to PDI	FEW	OPT	OPT	OPT	r	B(3)
5.4.2.2.3	Content of ECPs (Invokes APPX D)	ALL	ALL	ALL	ALL		B(2)
5.4.2.2.3.1	Unrelated engrg changes	ALL	ALL	ALL	ALL		
5.4.2.2.3.2	Revisions of ECPs	ALL	ALL	ALL	ALL	af	B(3)
5.4.2.2.3.3	Supporting data	ALL	ALL	ALL	ALL		
5.4.2.2.3.4	Classified data	ALL	ALL	ALL	ALL		
5.4.2.3	Class I engrg chg proposals	ALL	ALL	ALL	ALL		B(1)
5.4.2.3.1	Class I ECP decisions	N/A	N/A	N/A	N/A		
5.4.2.3.1.1	Tgt for tech decis-Cls I ECP	ALL	ALL	ALL	ALL		
5.4.2.3.1.2	ECP authorization	ALL	ALL	ALL	ALL		
5.4.2.3.1.3	Cls I compat engrg chgs	ALL	ALL	ALL	ALL		
5.4.2.3.1.4	Disapproval of ECPs	ALL	ALL	ALL	ALL		
5.4.2.3.2	Class I ECP justif codes	ALL	ALL	ALL	ALL		

Table 6.2.1.1-1c Tailoring guide for use with this TOR (continued)

PARA #	PARAGRAPH TITLE	D/V	EMD	PRD	OPS	NOTE	SMPL
5.4.2.3.3	Class I ECP types	ALL	ALL	ALL	ALL		
5.4.2.3.3.1	Preliminary change proposal	ALL	ALL	ALL	ALL		
5.4.2.3.3.1.1	Use of prelim ECPs (Type P)	ALL	ALL	ALL	ALL	s	B(3)
5.4.2.3.3.2	Use of formal ECP (Type F)	ALL	ALL	ALL	ALL		
5.4.2.3.4	Class I engrg chg priorities	ALL	ALL	ALL	ALL		
5.4.2.3.4.1	Exped Cls I ECPs w/priority of emergency or urgent	ALL	ALL	ALL	ALL		
5.4.2.3.5	Format for Cls I engrg chgs	ALL	ALL	ALL	ALL		
5.4.2.3.5.1	Class I engrg changes-functional	ALL	NO	NO	NO		B(3)
5.4.2.3.5.2	Class I engrg changes-allocated	NO	ALL	NO	NO		B(3)
5.4.2.3.5.3	Class I engrg changes-prod baseline	NO	NO	NO	NO		B(3)
5.4.2.3.6	Related engineering changes	ALL	ALL	ALL	ALL		
5.4.2.3.6.1	Rel engrg chgs-single prime	NO	ALL	ALL	ALL		B(3)
5.4.2.3.6.2	Rel engrg chgs-single prime-multi procuring activities	OPT	OPT	OPT	OPT	t	B(3)
5.4.2.3.6.3	Rel egrg chgs-separte primes	OPT	OPT	OPT	OPT	t	B(3)
5.4.2.3.6.4	Same egrg chgs-pring/sub coord	OPT	OPT	OPT	OPT	t	B(3)
5.4.2.3.6.5	Same egrg chg-sev contractors	OPT	OPT	OPT	OPT	t	B(3)
5.4.2.4	Class II engineering changes	NO	FEW	ALL	ALL	u	B(30
5.4.2.4.1	Class II engrg chg format	NO	FEW	ALL	ALL		
5.4.2.4.2	Class II justification codes	NO	FEW	ALL	ALL		
5.4.2.4.3	Concurrence in Class II chgs	NO	SLCT	SLCT	SLCT	u	B(3)
5.4.2.4.4	Approval of Class II chgs	NO	SLCT	SLCT	SLCT	u	B(3)
5.4.2.4.5	Non-custody of original dwgs	NO	NO	OPT	OPT	v	B(3)
5.4.3	Requirements for Requests for Deviation (RFDs)	NO	FEW	ALL	ALL	w, x	A(1)
5.4.3.1	Restrictions on deviations						
5.4.3.2	Recurring deviations						
5.4.3.3	Classification of deviations						
5.4.3.3.1	Minor						
5.4.3.3.2	Major						
5.4.3.3.3	Critical						
5.4.3.4	Format [Invokes APPENDIX E]						A(2)
5.4.3.5	Disposition of deviations						
5.4.3.5.1	Minor deviations						
5.4.3.5.2	Critical and major deviations						

Table 6.2.1.1-1d Tailoring guide for use with this TOR (continued)

PARA #	PARAGRAPH TITLE	D/V	EMD	PRD	OPS	NOTE	SMPL
5.4.4	Parts substitution	NO	NO	ALL	ALL	z	C(1)
5.4.5	Rqts for Spec Change Notices (SCNs) [Invokes APPX F]	ALL	ALL	ALL	ALL	z	A(1) A(2)
5.4.5.1	Approved SCN						
5.4.5.2	Changed pages						
5.4.6	Rqts for Notice of Revision (NORs) [Invokes APPX G]						C(1) C(2)

Table 6.2.1.1-1e Tailoring guide for use with this TOR (continued)

PARA #	PARAGRAPH TITLE	D/V	EMD	PRD	OPS	NOTE	SMPL
5.5	Config Status Acctg (CSA)	OPT	ALL	ALL	ALL	aa	B(1)
5.5.1	Purpose of CSA	OPT	ALL	ALL	ALL	aa	
5.5.2	CSA requirements	OPT	ALL	ALL	ALL	aa	
	[Invokes APPENDIX H]						B(2)
5.5.3	Preferred information system	OPT	ALL	ALL	ALL		
5.5.4	Retention of histor database	ALL	ALL	ALL	ALL		
5.5.5	CSA data elements	OPT	ALL	ALL	ALL		
	[Invokes APPENDIX I]						B(2)
5.5.6	Contractor focal point	ALL	ALL	ALL	ALL		B(3)
5.5.7	CSA analysis requirements	FEW	FEW	OPT	OPT	ab	B(3)
5.5.8	Reporting accomp of retro chgs	NO	NO	OPT	OPT	ac	B(2)
	[Invokes APPENDIX J]						
5.6	Configuration audits	N/A	N/A	N/A	N/A		
5.6.1	Contractor partic/respons	NO	ALL	ALL	OPT		A(1)
5.6.1.1	Subcontractors and suppliers						
5.6.1.2	Location						
5.6.1.3	Contractor reqts						
5.6.1.4	Government participation						
5.6.2	Functional Conf Audit (FCA)	NO	ALL	NO	NO	ad	A(1)
5.6.2.1	Contract reqts						
5.6.2.2	Contractor responsibility						
5.6.2.3	Verif procedures and rqts						
5.6.2.4	Post-audit actions		.				
5.6.2.5	FCA Certification Package						
5.6.3	Physical Config Audit (PCA)	NO	OPT	OPT	OPT	ae	A(1)
5.6.3.1	Contract reqts						
5.6.3.2	Contractor responsibility						
5.6.3.3	PCA procedures and rqts						
5.6.3.4	Post-audit actions		.				
5.6.3.5	PCA Certification Package						

6.2.1.2 Sample wording for contractual tasking.

6.2.1.2.1 Invoking a complete set of requirements.

The requirements of the standard are arranged so that, in large part, they can be invoked by reference to a lead paragraph; all subparagraphs of that lead paragraph are then applied to the contract. If an Appendix other than Appendix H (CSA) is invoked within the paragraph, it is intended that the entire Appendix be invoked, and the task should include that wording.

SAMPLE A: The contractor shall (ea., process requests for deviation from the current approved configuration documentation) in accordance with TOR, paragraph [1] [e.g., 5.4.3) and subparagraphs, [NOTE: if an Appendix is invoked by the paragraph, include] and Appendix [2] (e.g., E).

6.2.1.2.2 Tailoring out specific requirements.

Some of the requirements of this standard are provided for use in specific circumstances; one (or more) of the subparagraphs will have to be tailored out even though all of the other subparagraphs under the lead paragraph still apply.

SAMPLE B: The contractor shall (eg., document Class II engineering changes) in accordance with this TOR, paragraph [1] (e.g., 5.4.2.4) and subparagraphs, [NOTE: if an Appendix is invoked by the paragraph include] and Appendix [2] (eg. D) , except that subparagraph(s) [3] (e.g., 5.4.2.4.4) and (3) does not apply.

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6.2.1.2.3 Identifying specific applicable requirements.

Other requirements in this standard are intended to be invoked by themselves as we select specific parts of a general CM tasking for a particular program. If an Appendix other than Appendix H (CSA) is invoked within the paragraph, it is intended that the entire Appendix be invoked, and the task should include that wording.

SAMPLE C: The contractor shall (a. g. manage the interfaces of the items being developed in accordance with this TOR, paragraph(s) [1] (e. g . ., 5.3.7.1) and [1] [NOTE: if an Appendix is invoked by the paragraph, include] and Appendix [21].

6.2.1.3 Specific tailoring notes.

The following specific tailoring information is provided to supplement the guidance provided in Table II. [NOTE: The number in parentheses at the beginning of each note is the number of the primary paragraph(s) to which it applies.]

   a. (4) The General Requirements of a standard are normally invoked on all contracts without tailoring. In this standard, the only exceptions are for the electronic transfer of data (4.3.2), for the interactive access to digital data (4.3.3), and for the audits (4.7). You will have to decide whether to tailor them out for your program.

   b. (4.3.2 and 4.3.3) While the use of electronic submittal of data will become nearly universal, some programs may not want to use the capabilities; this will be especially true in the next few years while this technology is maturing. The requirement for the capability to interactively access the contractor's database will be applied only to selected programs where such access to "real-time" data is necessary to successfully manage the program. A primary criterion will be the size of the contractor and the availability of a database in the contractor's organization to provide the needed information. For a small contractor, on a small program, who does not have such a capability, this requirement could vastly increase the contract cost.

   c. (4.7) This paragraph would be invoked on every contract which invokes the detailed FCA (5.6.2) or PCA (5.6.3) tasks of this standard. (See also 6.2.l.3.ad and se.)

   d. (5.2.1) CM Plans are usually required as a part of the first phase of the program, with updates provided at least with the transition to the next phase of the development. The CM Plan may be used as a guidance document, or it may be invoked (by referencing the number, revision, and date) as a contractually binding requirement, based on the preference of the program.

   e. (5.3.3) The developmental configuration terminology has been expanded to include both developmental hardware and software. During Demonstration/Validation and EMD phases, we want the contractor to internally control the developmental documentation once it has been released and prior to its being baselined by the Government. Once into the Production phase, such control is still required for changes the contractor is developing; so this requirement might continue to be invoked.

   f. (5.3.3.2/5.3.3.3; 5.3.6.4/5.3.6-5; 5.3.6.7/5.3.6.7.1/ 5.3.6.7.2) Most contracts will invoke these paragraphs, since they will involve the development and production of both hardware and software. When a contract involves strictly one or the other, only the appropriate paragraph(s) should be invoked. Also, when it is desired that the contractor use Government issued drawing numbers and/or part numbers, that requirement should be cited.

   g. (5.3.4.1.1) Many major systems will require the identification of the FCD in the Concept Exploration phase and the baselining of the FCD in the Demonstration/Validation phase. On smaller programs that start with EMD phase, this requirement should be invoked in that contract; for major systems, the requirement for compliance with the FCD should be continued during the EMD phase. Once production phase is reached, many programs rely only on the PCD for definition of their requirements for the items they are buying. Others (mainly larger systems) continue to invoke the FCD as the overall requirement for the capabilities of all of the items they are buying, especially for correction of deficiencies determinations.

   h. (5.3.4.1.2) Most programs which include a Demonstration/Validation phase will include the requirement to generate the draft ACD during that phase; the ABL will be established as a part of the EMD tasking. Once the Production phase is reached, many programs rely only on the PCD for definition of their requirements for the items they are buying. Others continue to invoke the ACD as the overall requirement for the capabilities of the particular item they are buying, especially for

correction of deficiencies; if that is the case, MIL-STD-961 (program-unique) specifications for the ACD and PCD should be ordered as "two-part" specifications.

i. (5.3.4.1.3) Most programs will require the identification of the PCD during the EMD phase. Programs including software may require the establishment of the PBL for the software during the EMD phase. Programs which plan to compete the production contract for the item(s) being developed should require the establishment of the PBL as a part of the EMD effort. All other programs will normally establish the PBL as a part of the Production phase effort.

j. (5.3.4.1.4) Most programs will require the contractor to maintain the original copies of the configuration documentation during the Demonstration/Validation and EMD phases. Many programs continue with contractor maintenance of the originals throughout the production phase, too; some transfer control of the originals to the program office. In the Operation and Support phase, the documentation is usually maintained by the managing DOD service.

k. (5.3.5.2) Once the government has taken control of the originals of the configuration documentation, it may require that the activity implementing the ECP update the originals and release them using a specific form called an Engineering Release Record (ERR).

l. (5.3.6, 5.3.6.7.3) Most contracts should invoke this lead paragraph to incorporate the entire section of requirements on configuration identifiers. However, the paragraph on NDI/COTS/PDI numbering should be tailored out unless it is appropriate.

m. (5.3.6.6. , 5.3.6.6.2) The requirements for the contractor to plan for (and sometimes start) issuing serial numbers is usually invoked for the EMD phase. The continuing requirement for the issue of the serial numbers is usually invoked in the production contract(s) .

n. (5.3.6.6.1) For some specialized types of equipment, the Government issues the serial numbers to be affixed to the deliverable units. If such equipment is a part of your program, this requirement must be invoked specifically for the equipment involved. Also, if a follow-on production or spares buy is awarded to a contractor other than the original design activity, it may be advantageous to invoke this requirement if you want the serial numbers for the delivered units to continue in an unbroken string even though the CAGE changes.

o. (5.3.6.7)Product marking is most critical during the production and support phases to make sure that the deliverable units are adequately identified. However, this task will normally be invoked in the EMD phase to require the contractor to establish the procedures and evaluate the medium to be used to accomplish this marking.

p. (5.3.7.1) Once programs reach the Production phase, control of interfaces below the ACD level is provided through control of the detail design invoked in the product baseline and the PCD. If a detail design is not invoked for production, then this requirement is
needed.

q. (5.3.7.2) The Interface Control Working Group (ICWG) is required primarily when the Government has awarded several contracts to different contractors for the development of different pieces of a system. It may also be utilized where several different DOD agencies services must meet regularly with one or more contractors developing the system. If an ICWG is needed, then the contractor's role as either a member or as the chair/member must be identified. If contractor is to be a member, invoke 5.3.7.2 and tailor out 5.3.7.2.2; if contractor is to be the ICWG chair and a member, invoke 5.3.7.2 using Sample A.

r. (5.4.2.2.2) If privately developed items(NDI, COTS, PDI) are not involved in the program, this requirement should not be invoked.

s. (5.4.2.3.3.1.1 and 5.4.2.3.3.1.2) When the program wants to obtain brief preliminary information about routine Class I engineering changes, the contract must specifically cite the use of the preliminary ECP for this purpose,

t. (5.4.2.3.6.3 - 5.4.2.3.6.5) These task is normally not required during the Demonstration/Validation phase since the allocated baselines would not be established until the end of this phase or the beginning of the EMD phase; thus, there would be no related ECPS. These task would only be invoked, along with the requirement for the "related changes for a single prime", when the situation cited exists. You will have to evaluate your acquisition strategy to determine whether they will apply.

u. (5.4.2.4/5.4.2.4.3/5.4.2.4 .4) Since Class 11 engineering changes apply only to the product baseline, this set of paragraphs is applicable primarily in the production phase and beyond. If product baselines will be established as a part of the EMD phase, then this task would be invoked for use once the

PBL(s) is established. The contract must specify that either "concurrence" or "approval" of the Class II changes apply by citing the appropriate subparagraph.

v. (5.4.2.4.5) If the contractor will not have control of the originals of the "drawings", this requirement should be invoked to define the requirement for Government approval of the Class II changes. That practice requires considerable manpower to monitor. These optional Tasks should be used selectively; they would be most useful in situations where lack of supportability for the system/item can have significant National Security impacts to the extent that such detailed information is necessary to minimize such supportability problems.

w. (H.5.1.5) Configuration of units in the field. This paragraph and Task 501 are normally invoked only for the Production phase contract. The government support activity usually has an existing information system that will provide the information required for Tasks 502 and 503. If SO, it should be used from the start of the delivery of production units to simplify the transition from a contractor to a government information system when production is complete.

x.(H.5.1.6) Tracking audit action items. This paragraph and Tasks 601 and 602 would not normally be invoked on contracts. The government buying activity normally has sufficient resources to provide adequate tracking capabilities and retention of historical information.

Table 6.2.1.3-1 Application of CSA Tasks

LIFE CYCLE PHASE		DEMONSTRATION & VALIDATION	ENGINEERING & MANUFACTURING DEVELOPMENT	PRODUCTION & DEPLOYMENT	OPERATIONS & SUPPORT
BASELINE(S) NORMALLY IN EFFECT		FUNCTIONAL BASELINE	FUNCTIONAL/ ALLOCATED BASELINE	FUNCTIONAL/ ALLOCATED/ PRODUCT BASELINE	FUNCTIONAL/ ALLOCATED/ PRODUCT BASELINE
TASK 101	Specification Revision Level	REQUIRED CONTRACTOR	REQUIRED CONTRACTOR	REQUIRED CONTRACTOR	REQUIRED SUPPORT ACTIVITY
TASK 102	Specification Revision History	REQUIRED CONTRACTOR	REQUIRED CONTRACTOR	REQUIRED CONTRACTOR	REQUIRED SUPPORT ACTIVITY
TASK 103	Drawing Revision Level	NOT APPLICABLE	NOT APPLICABLE	REQUIRED CONTRACTOR	REQUIRED SUPPORT ACTIVITY
TASK 104	Drawing Revision History	NOT APPLICABLE	NOT APPLICABLE	REQUIRED CONTRACTOR	REQUIRED SUPPORT ACTIVITY
TASK 105	Software Version Level	NOT APPLICABLE	NOT APPLICABLE	REQUIRED CONTRACTOR	REQUIRED SUPPORT ACTIVITY
TASK 106	Software Version History	NOT APPLICABLE	NOT APPLICABLE	REQUIRED CONTRACTOR	REQUIRED SUPPORT ACTIVITY
TASK 107	Indentured Listing	NOT APPLICABLE	NOT APPLICABLE	REQUIRED CONTRACTOR	REQUIRED SUPPORT ACTIVITY
TASK 111	Program Contracts	RECOMMENDED BUYING ACTIVITY	RECOMMENDED BUYING ACTIVITY	RECOMMENDED BUYING ACTIVITY	RECOMMENDED SUPPORT ACTIVITY
TASK 201	Changes in Process	REQUIRED BUYING ACTIVITY	REQUIRED BUYING ACTIVITY	REQUIRED BUYING ACTIVITY	REQUIRED SUPPORT ACTIVITY
TASK 202	Change History	RECOMMENDED BUYING ACTIVITY	RECOMMENDED BUYING ACTIVITY	RECOMMENDED BUYING ACTIVITY	RECOMMENDED SUPPORT ACTIVITY
TASK 211	Change Event Date	NOT RECOMMENDED BUYING ACTIVITY	RECOMMENDED BUYING ACTIVITY	RECOMMENDED BUYING ACTIVITY	OPTIONAL SUPPORT ACTIVITY
TASK 212	Change Event History	NOT RECOMMENDED BUYING ACTIVITY	RECOMMENDED BUYING ACTIVITY	RECOMMENDED BUYING ACTIVITY	OPTIONAL SUPPORT ACTIVITY
TASK 213	Date Search	NOT RECOMMENDED BUYING ACTIVITY	RECOMMENDED BUYING ACTIVITY	RECOMMENDED BUYING ACTIVITY	OPTIONAL SUPPORT ACTIVITY
TASK 301	Approved Changes	REQUIRED EITHER BUYING ACTIVITY OR CONTRACTOR	REQUIRED EITHER BUYING ACTIVITY OR CONTRACTOR	REQUIRED EITHER BUYING ACTIVITY OR CONTRACTOR	REQUIRED SUPPORT ACTIVITY
TASK 401	Approved Change Implement	RECOMMENDED BUYING ACTIVITY	RECOMMENDED CONTRACTOR	REQUIRED CONTRACTOR	REQUIRED SUPPORT ACTIVITY
TASK 411	Specification	OPTIONAL BUYING ACTIVITY	OPTIONAL CONTRACTOR	OPTIONAL CONTRACTOR	OPTIONAL SUPPORT ACTIVITY
TASK 412	Drawing	NOT APPLICABLE	NOT APPLICABLE	OPTIONAL CONTRACTOR	OPTIONAL SUPPORT ACTIVITY
TASK 413	Software	NOT APPLICABLE	NOT APPLICABLE	OPTIONAL CONTRACTOR	OPTIONAL SUPPORT ACTIVITY
TASK 414	Technical Manual	NOT APPLICABLE	NOT APPLICABLE	OPTIONAL CONTRACTOR	OPTIONAL SUPPORT ACTIVITY
TASK 415	Spares Purchase	NOT APPLICABLE	NOT APPLICABLE	OPTIONAL CONTRACTOR	OPTIONAL SUPPORT ACTIVITY
TASK 416	Support Equipment	NOT APPLICABLE	NOT APPLICABLE	OPTIONAL CONTRACTOR	OPTIONAL SUPPORT ACTIVITY
TASK 417	Retrofit Kit Development	NOT APPLICABLE	NOT APPLICABLE	OPTIONAL CONTRACTOR	OPTIONAL SUPPORT ACTIVITY
TASK 501	As-Built Record	NOT APPLICABLE	NOT APPLICABLE	REQUIRED CONTRACTOR	NOT APPLICABLE
TASK 502	Maintenance History	NOT APPLICABLE	NOT APPLICABLE	REQUIRED SUPPORT ACTIVITY	REQUIRED SUPPORT ACTIVITY
TASK 503	Retrofit History	NOT APPLICABLE	NOT APPLICABLE	REQUIRED SUPPORT ACTIVITY	REQUIRED SUPPORT ACTIVITY
TASK 601	Audit Action Item Status	NOT APPLICABLE	REQUIRED BUYING ACTIVITY	REQUIRED BUYING ACTIVITY	AS APPROPRIATE BUYING ACTIVITY
TASK 602	Audit Action Item History	NOT APPLICABLE	OPTIONAL BUYING ACTIVITY	OPTIONAL BUYING ACTIVITY	OPTIONAL BUYING ACTIVITY

6.3   Data requirements.

The following Data Item Descriptions must be listed, as applicable, on the Contract Data Requirements List (DD Form 1423) when this standard is applied on contract, in order to obtain the data, except where DOD FAR Supplement 27.475-1 exempts the requirement for a DD Form 1423.

Table 6.3-1 DIDs

Reference Paragraph	DID Number	DID Title
5.2.1.	DI-CMAN-80858B	Contractor's CM Plan
5.3.5.2.1	DI-CMAN-80463C	Engineering Release Record
5.3.7.1	DI-CMAN-81248A	Interface Control Drawing Documentation
	DI-CMAN-80639C	Engineering Change Proposal
5.4.2.4.1,		
5.4.8.2.1		
5.4.3.4	DI-CMAN-80640C	Request for Deviation
5.4.8.3.3		
5.4.8.4.3		
5.4.6	DI-CMAN-80643C	Specification Change Notice
5.4.7	DI-CMAN-80642C	Notice of Revision
5.5.5	DI-CMAN-81253A	Configuration Status Accounting Information
5.5.8	DI-CMAN-81245A	Installation Completion Notification
5.6.1.2	DI-ADMN-81249A	Conference Agenda
5.6.1.2	DI-ADMN-81250A	Conference Minutes
5.6.2.5	DI-CMAN-81022C	Configuration Audit Summary
5.6.3.5 Report		

The above DIDs are those cleared as of the date of this TOR.
The current issue of DOD 501O.12-L, Acquisition Management Systems and Data Requirements Control List (AMSDL) must be researched to ensure that only current, cleared DIDs are cited on the DD Form 1423.

6.4   Superseded data.

The following military standards are cancelled and replaced with this TOR. MIL-STD-973:
MIL-STD-480
MIL-STD-481
MIL-STD-482
MIL-STD-483
MIL-STD-973
MIL-STD-1456

6.5   Subject term (key word) listing.

Baseline
Configuration audit
Configuration control
Configuration control board
Configuration documentation
Configuration identification
Configuration item
Configuration management plan
Configuration status accounting
Computer software configuration item
Developmental configuration
Deviation/Request for Deviation
Effectivity
Engineering change proposal
Engineering release
Hardware configuration item
Interface control
Interface control working group
Non-developmental item
Notice of Revision
Specification Change Notice
Version
Work breakdown structure

6.6   Useful references.

- CAGE Codes are provided in Defense Logistic Agency (DLA) Cataloging Handbook H4/H8 Series. (See 3.8)
- Requirements associated with distribution statements for technical data should be contained in the SOW or CDRL (See 4.3.1)
- Requirements associated with Work Breakdown Structures (WBSs) are provided in MIL-HDBK-881, "Work Breakdown Strictures for Defense Materiel Items." WBSs will normally be contractually invoked in development contracts only. (See 5.2.2)
- Specification identifiers and procedures associated with changes to specifications are contained in MIL- STD-961, "Military Specifications and " Associated Documents, Preparation of." Similar material associated with engineering drawings, associated lists and ancillary documents is contained in ASME Y 14.100 "Engineering Drawing Practices. " (See 5.3.6.3)
- Part/item identification numbers are addressed in ASME Y 14.100and MIL-STD-961. (See 5.3.6.4)
- CIs, including component parts, assemblies, units, sets and other pieces of military property are often marked with their identifiers in accordance with MIL-STD-130, "Identification Marking of US Military Property;" or with identification plates/nameplates in accordance with MIL-P-15024, "Plates, Tags and Bands for Identification of Equipment. " (See 5.3.6.7)
- Requirements associated with a system hazard analysis are contained in MIL-STD-882, "System Safety Program Requirements". (See 5.4.2.3.2g)
- Requirements associated with the DoD Parts Control Program are contained in MIL-STD-965, "Parts Control Program. " (See5.6.3.3d)
- Requirements associated with logistics support analysis (LSA) tasks are contained in MIL-STD-1388-1, "Logistic Support Analysis" and requirements associated with LSA data are contained in MIL-STD -1388-2, "DoD Requirements for a Logistic Support Analysis Record. " (See D.5.3.3c)

APPENDIX A

FCA AND PCA CERTIFICATION DOCUMENTATION

AUDIT ACTION ITEM LIST – PART I

PROBLEM IDENTIFICATION

FCA: **PCA:**   **Control No.:**

Contractor: Contract Number:

Cage Code:

<u>Action Item Originator</u>   Organization:

Name:

Phone:

<u>Identification of Item being Audited</u>

Configuration Item Nomenclature:

Part Number: Serial Number:

Subelement Affected:

Contract Requirement(s) Affected:

<u>Document</u>	<u>Page</u>	<u>Paragraph</u>

Narrative Description of Problem:

Alternative Approach (Optional):

Forwarded by:

        Group Leader   Team Leader

AUDIT ACTION ITEM LIST – PART II

PROBLEM RESOLUTION

FCA: **PCA:**   **Control No.:**

Contractor's Response:

☐ <u>OPEN</u> (Follow-up action required)   ☐ <u>CLOSED</u> (No follow-up required)

FIRST ACTION	Assigned to:	Suspense:

SECOND ACTION	Assigned to:	Suspense:

Concurrence Signatures:

Contractor	Government

Resolution

Government Action Item Closeout

	Name	Signature	Date
Originator Audit Team			
Government			
Contractor			

FCA CHECKLIST

Nomenclature:

CI Identifier: Date:

Contractor Requirements	Yes	No
1. Deviation List Prepared		
2. Verification Test Procedures Submitted		
3. Verification Testing Completed		
4. Verification Test Results Compiled and Available		
5. Facilities for Conducting FCA Available		
6. Verification Test Procedures Reviewed and Approved		
7. Verification Testing Witnessed		
8. Verification Test Data Results Reviewed and Approved		

Comments:

FCA CERTIFICATION PACKAGE

for

CI IDENTIFIER(s): _____

CONTRACT NO. _____

Prime Contractor:	**Equipment Manufacturers:**
_____	_____
_____	_____
_____	_____
_____	_____

Approved by: _____   Approved by: _____
               (Contractor)   (Government)

      Date: _____   Date: _____

FCA CERTIFICATION PACKAGE

SCOPE / PURPOSE

SCOPE:

Functional Configuration Audit (FCA) was conducted on the following Configuration Item:

CI IDENTIFIER	NOMENCLATURE	PART NO.	SERIAL NO.

PURPOSE:

The purpose of this FCA was to verify that the configuration item's performance complied with the Development Specification.

FCA CERTIFICATION PACKAGE

SHEET NO. 1

(for Equipment/Computer Software)

Contract: _____ **Date:** _____

Contractor: _____

CI Identifier: _____

Verification Test Procedures and Results. The verification test/analysis results have been reviewed to ensure that testing is adequate, properly done, and certified. (All test procedures and interface documents shall be reviewed to assure that the documents have been approved by the Government. All test data sheets shall be reviewed to assure that the test was witnessed by a representative of the Government.)

Attached is a list of the documents reviewed.

Check one.

☐ Procedures and results reviewed satisfy the requirements and are accepted. See Attachment for comments.

☐ Attached is a list of deficiencies.

Signature(s) of FCA Team Member(s):

* _____   _____

_____   _____

_____   _____

_____   _____

_____   _____

_____   _____

*Sub-Team Chairperson

FCA CERTIFICATION PACKAGE

SHEET NO. 2

(for Equipment/Computer Software)

Contract: _____ **Date:** _____

Contractor: _____

CI Identifier: _____

Review of Deviations. A review of all deviations to military specifications and standards that have been approved. The purpose is to determine the extent to which the equipment/computer software undergoing FCA vary from one application specifications and standards and to form a basis for satisfactory compliance with these specifications and standards. In accordance with this paragraph, all applicable deviations have been reviewed with the following results:

Check one.

☐ The equipment/computer software listed on Certification Sheet No. 1 of this report complies with all applicable specifications and standards. See Attachment ___ for comments.

☐ Attached is a summary of FCA discrepancies.

Signature(s) of FCA Team Member(s):

*
_____   _____

_____   _____

_____   _____

_____   _____

_____   _____

  *Sub-Team Chairperson

A. Deviation Review Team Instructions. All approved deviations to military specifications and standards shall be reviewed and recorded. Also, record any part of the FCA which fails to meet specifications or standards but is not an approved deviation.

B. Results of Team Review. List the deviations against the equipment/computer software being FCA'd that were reviewed.

FCA CERTIFICATION PACKAGE

DEFICIENCY SUMMARY LIST

Configuration Item Nomenclature:

CI Identifier	Report Reference	Description	Responsibility for Correction	Place of Inspection	Inspected By

FCA CERTIFICATION PACKAGE

SPECIFICATION / TESTING REVIEW

Configuration Item Nomenclature: _____

Specification Number: _____

Test Procedures: _____

Spec Ref TP Ref	Description	Test Result

FCA CERTIFICATION PACKAGE

FCA DEVIATIONS

Configuration Item Nomenclature:

Reference (Spec, STD, etc.)	CCB or MRB Approval / Directive	Requirement Waived	Remarks

PCA CHECKLIST

The following hardware, computer software, and documentation shall be available, and the following tasks shall be accomplished, at the PCA.

HARDWARE: COMPUTER SOFTWARE: DOCUMENTATION:				
			Yes	**No**
1.	Approved final draft of the configuration item product specification.			
2.	A list delineating both approved and outstanding changes against the configuration item.			
3.	Complete shortage list.			
4.	Acceptance test procedures and associated test data.			
5.	Engineering Drawing Index.			
6.	Operating, maintenance, and illustrated parts breakdown manuals.			
7.	List of approved material review board actions on deviations.			
8.	Proposed DD Form 250 - "Material Inspection and Receiving Report."			
9.	Approved nomenclature and nameplates.			
10.	Manuscript copy of all software CI manuals.			
11.	Computer Software Version Description Document.			
12.	Current set of listings and updated design descriptions, or other means of design portrayal, for each software CI.			
13.	FCA minutes for each configuration item.			
14.	Program Parts Selection List (PPSL) (see MIL-STD-965).			

TASKS:			Yes	No
1.	Define Product Baseline.			
2.	Specification Review and Validation.			
3.	Drawing Review.			
4.	Review acceptance test procedures and results.			
5.	Review shortages and unincorporated design changes.			
6.	Review deviations.			
7.	Examine proposed DD 250.			
8.	Review contractor's Engineering Release and Change Control System.			
9.	Review system allocation document.			
10.	Review Software User's Manuals, Software Programmer's Manuals, Computer System Operator's Manual, and Firmware Support Manual.			

11.	Review software CIs for the following:
	  a. Preliminary and detail Software Component design descriptions.
	  b. Preliminary and detail Software interface requirements.
	  c. Database characteristics, storage allocation charts, and timing and sequencing characteristics.			

12.	Review packaging plan and requirements.			
13.	Review status of Rights in Data.			

14.	Ensure that:
	  a. All appropriate items installed in the deliverable hardware (that should have been processed through the PCP) are identified on the PPSL, or the necessary approval documentation is available.
	  b. The hardware does not contain items that should have been processed through the PCP but were not. (See MIL-STD-965.)			

PCA CERTIFICATION PACKAGE

CI IDENTIFIER: _____

CONTRACT NO. _____

<u>Prime Contractor</u>:   **<u>Equipment Manufacturers</u>:**

_____   _____

_____   _____

_____   _____

_____   _____

Approved by: _____(Designee)_____   Approved by: _____(Designee)_____
                   (CONTRACTOR)   (GOVERNMENT)

Date: _____   Date: _____

PCA CERTIFICATION PACKAGE

SCOPE / PURPOSE

SCOPE.	A Physical Configuration Audit (PCA) was conducted on the following end items of equipment/computer software:			
CI IDENTIFIER	**CI NOMENCLATURE**	**PART NUMBER**	**SERIAL NUMBER**	**NSN**
PURPOSE:	The purpose of the PCA was to ensure accuracy of the identifying documentation and to establish a product baseline.*			

* The establishment of a product baseline for equipment/computer software is not to be construed as meeting Government requirements for delivery of an operational system meeting approved acceptance criteria.

DEFINITION OF TERMS:

COMMENT: A note explaining, illustrating, or criticizing the meaning of a writing. Items of this nature should be explored by the contractor and/or the Government, but corrective action is NOT necessary to successfully accomplish the PCA.

DISCREPANCY: A note explaining, illustrating, or criticizing the difference between writings. A note showing the variance between what exists and what is acceptable. Items of this nature shall be rectified by the contractor prior to successful accomplishment of a PCA.

PCA CERTIFICATION PACKAGE

SHEET NO. 1

(for Equipment/Computer Software)

Contract: _____   **Date:** _____

Contractor: _____

_____

_____

_____

Product Baseline. The following documents of the issue and date shown comprise the product baseline for the listed equipment/computer software.

Spec. No.	Assembly Top Drawing No.	Issue	Equipment/Computer Software Nomenclature

Signature(s) of PCA Team Member(s):

** _____   _____

*   _____   _____

_____   _____

_____   _____

_____   _____

** Team Chairperson
*   Sub-Team Chairperson

PCA CERTIFICATION PACKAGE

SHEET NO. 2

(for Equipment/Computer Software)

Contract: _____ **Date:** _____

Contractor: _____

_____

Specification Review and Validation. Specifications have been reviewed and validated to assure that they adequately define the configuration item and the necessary testing, mobility/transportability and packaging requirements.

Check one.

☐ The Product Specifications are complete and adequately define the configuration item. They will, therefore, constitute the product baseline. See attachment __ for comments.

☐ The Product Specifications are unacceptable. See attachment __ for a list of discrepancies.

Signature(s) of PCA Team Member(s):

** _____ _____

* _____ _____

_____ _____

_____ _____

** Team Chairperson
* Sub-Team Chairperson

A. Specification Review and Validation Instructions. The detailed specifications listed in paragraph B below shall be reviewed for compliance with the applicable requirements. Each specification shall serve as the basic document for configuration control of the subject configuration items. The information contained within the specifications will be audited at the PCA.

B. Review and Validation Results.

1. Specifications reviewed and validated:

Spec. No.	Part No.	Date	Equipment/Computer Software Nomenclatures

2. Specifications reviewed and disapproved: (Provide attachment for causes.)

Spec. No.	Part No.	Date	Equipment/Computer Software Nomenclatures

PCA CERTIFICATION PACKAGE

SHEET NO. 3

(Equipment)

Contract: _____ **Date:** _____

Contractor: _____

_____

Drawing Review. Drawings have been compared with the equipment to ensure that the latest drawing change letter has been incorporated into the equipment, that part numbers agree with the drawings, and that the drawings are complete and accurately describe the equipment.

Check one.

☐ The drawings are complete and accurately describe the equipment. See attachment ___ for comments.

☐ The drawings are compatible with the applicable contract Program Parts Selection List (PPSL).

☐ Attachment ___ is a list of discrepancies.

Signature(s) of PCA Team Member(s):

* _____   _____

_____   _____

_____   _____

_____   _____

* Sub-Team Chairperson

Drawing Review Results. The following drawings were reviewed by the PCA drawing review sub-teams:

DOCUMENT NUMBER   DOCUMENT TITLE

PCA CERTIFICATION PACKAGE

SHEET NO. 4

(Equipment)

Contract: _____ **Date:** _____

Contractor: _____

_____

Acceptance Test Procedures and Results. The acceptance test procedures have been reviewed for adequacy, and the acceptance test results have been reviewed, to ensure that the testing has been properly done and certified.

Attachment ___ is a list of the documents reviewed.

Check one.

☐ Procedures and results reviewed satisfy the requirements and are accepted. See attachment for comments.

☐ Attachment ___ is a list of discrepancies.

Signature(s) of PCA Team Member(s):

** _____   _____

* _____   _____

_____   _____

_____   _____

* Sub-Team Chairperson

A. **Acceptance Test Procedures.** The following acceptance test procedures were reviewed by the ATP Sub-Team:

Document Number	Date/Rev. Ltr.	Document Title	Status

B. **Acceptance Test Results.** The following acceptance test results documentation was reviewed by the ATR Sub-Team:

Document Number	Date/Rev. Ltr.	Document Title	Status

PCA CERTIFICATION PACKAGE

SHEET NO. 5

(for Equipment/Computer Software)

Contract: _____ **Date:** _____

Contractor: _____

_____

REVIEW OF SHORTAGES AND UNINCORPORATED DESIGN CHANGES

The shortages and unincorporated design changes listed on the proposed DD Form 250, "Material Inspection and Receiving Report," and other records, have been reviewed.

Check one.

☐   There are no shortages or unincorporated design changes.

☐   Attachment ___ is a list of shortages and/or unincorporated design changes, and the recommended corrective action required.

Signature(s) of PCA Team Member(s):

* _____   _____

_____   _____

_____   _____

_____   _____

   * Sub-Team Chairperson

A.   Review of Shortages and Unincorporated Design Changes.
All shortages and unincorporated design changes listed on the proposed DD Form 250, "Material Inspection and Receiving Report," shall be reviewed by the Government or their designated representatives for a determination of what changes should be accomplished in the field and what changes should be accomplished at the contractor's facility. The Government shall also determine if the reported shortages and unincorporated changes are complete.

B.   Results
List the shortages and unincorporated design changes that were reviewed in compliance with requirements, including the agreed-to corrective action.

PCA CERTIFICATION PACKAGE

SHEET NO. 6

(for Equipment/Computer Software)

Contract: _____ **Date:** _____

Contractor: _____

_____

REVIEW DEVIATIONS

A review of all deviations to military specifications and standards that have been approved. The purpose is to determine the extent to which the equipment/computer software undergoing PCA varies from applicable specifications and standards and to form a basis for satisfactory compliance with these specifications and standards.

Check one.

☐　The equipment/computer software listed on Certification Sheet No. 1 of this report complies with all applicable specifications and standards. See attachment ___ for comments.

☐　Attachment ___ is a list of discrepancies and/or comments.

In accordance with this paragraph, all applicable deviations have been reviewed with the following results:

Signature(s) of PCA Team Member(s):

＊ _____   _____

_____   _____

_____   _____

_____   _____

_____   _____

_____   _____

＊　Sub-Team Chairperson

Deviation Review Team Instructions.
All approved deviations to military specifications and standards shall be reviewed and recorded. Also, record any part of the PCA that fails to meet specifications or standards but is not an approved deviation.

Results of Team Review.
List the reviewed deviations against the equipment/computer software being PCA'd.

PCA CERTIFICATION PACKAGE

SHEET NO. 7

(for Equipment/Computer Software)

Contract: _____   **Date:** _____

Contractor: _____

_____

EXAMINATION OF THE PROPOSED DD FORM 250.

The DD Form 250 has been examined to ensure that it adequately defines the equipment/computer software and that unaccomplished tasks are included as deficiencies.

<u>Check one</u>.

☐   The DD Form 250 adequately defines the equipment/computer software and all unaccomplished tasks are included as deficiencies.

☐   Attachment ____ is a list of discrepancies and/or comments.

<u>Signature(s) of PCA Team Member(s)</u>:

* _____   _____

_____   _____

_____   _____

_____   _____

_____   _____

*   Sub-Team Chairperson

A.   <u>Examination of Proposed DD Form 250.</u>
   The proposed DD Form 250 shall be examined for completeness and an accurate definition of the equipment/computer software. Unaccomplished tasks, shortages, and certain specified discrepancies uncovered at the PCA shall be included in the DD Form 250. If the equipment/computer software is to be shipped from the plant, the Program Office representative will recommend to the Contract Administrative Office that the DD Form 250 be executed in accordance with the terms of the contract.

B.   <u>Results.</u>
   Include a statement that the proposed DD Form 250 was examined and recommended.

PCA CERTIFICATION PACKAGE

SHEET NO. 8

(for Equipment/Computer Software)

Contract: _____ **Date:** _____

Contractor: _____

_____

REVIEW OF CONTRACTORS' ENGINEERING RELEASE AND CHANGE CONTROL SYSTEM.

The contractor's engineering release system and change control procedures have been reviewed to ensure that they are adequate to properly control the processing and formal release of engineering changes.

Check one.

☐ The contractor's engineering release system and change control procedures are adequate for the processing and formal release of engineering changes. See attachment ___ for comments.

☐ Attachment ___ is a list of deficiencies.

Signature(s) of PCA Team Member(s):

* _____   _____

_____   _____

_____   _____

_____   _____

_____   _____

* Sub-Team Chairperson

PCA CERTIFICATION PACKAGE

SHEET NO. 9

(for Equipment/Computer Software)

Contract: _____   **Date:** _____

Contractor: _____

_____

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1. REVIEW OF LOGISTICS SUPPORT PLAN FOR PRE-OPERATIONAL SUPPORT.

The logistics Support Plan for Pre-operational Support has been reviewed to ensure that it is adequate to support the acquisition phase and is compatible with the operational phase maintenance concept and support requirements.

Check one.

☐ The contractor's Logistic Plan for pre-operational support will fulfill the acquisition phase requirements and is compatible with operational phase needs.

☐ Attachment ___ is a list of deficiencies.

2. REVIEW OF LONG LEAD TIME ITEMS AND PROVISIONED ITEMS PROCESSED PRIOR TO PCA.

Long Lead Time items released and items provisioned prior to PCA have been reviewed to ensure that obsolete items resulting from pre-PCA design changes are purged from the system. While basic items may be upgraded by rework or modification, these actions have been verified as accomplished or in process, based upon design change notice.

Check one.

☐ Long lead time items, and provisioned items processed prior to PCA, are all of current configuration at time of PCA or are in work.

☐ Attachment ___ is a list of deficiencies.

Signature(s) of PCA Team Member(s):

* _____   _____

_____   _____

_____   _____

_____   _____

_____   _____

* Sub-Team Chairperson

SMC Standard Improvement Proposal

INSTRUCTIONS

1. Complete blocks 1 through 7. All blocks must be completed.
2. Send to the Preparing Activity specified in block 8.

NOTE: Do not be used to request copies of documents, or to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements. Comments submitted on this form do not constitute a commitment by the Preparing Activity to implement the suggestion; the Preparing Authority will coordinate a review of the comment and provide disposition to the comment submitter specified in Block 6.

SMC STANDARD CHANGE RECOMMENDATION:	1. Document Number	2. Document Date

3. Document Title	

4. Nature of Change
(Identify paragraph number; include proposed revision language and supporting data. Attach extra sheets as needed.)

5. Reason for Recommendation

6. Submitter Information

a. Name	b. Organization
c. Address	d. Telephone
e. E-mail address	7. Date Submitted

8. Preparing Activity	Space and Missile Systems Center
	AIR FORCE SPACE COMMAND
	483 N. Aviation Blvd.
	El Segundo, CA 91245
	Attention: SMC/EAE

March 2008